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A
DISCOVERY
OF INFINITE
TREASVRE,
HIDDEN SINCE
THE WORLDS
BEGINNING.

VVhereunto all men, of what de-
gree soever, are friendly invited
to be sharers with the Dis-
coverer, G. Platts.

Prov. 13. ver. 11.

*Wealth gotten by vanitie shall be diminished, but he that gathereth it by labour
shall prosper.*

*Homo quanto plus cognoscit & intelligit, & bonum profert actu,
tanto Deo similior.*

LONDON,
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within the Turn-stile in Holborne. 1639.

DISCOVERY

OF THE

TRAVEL

HIDDEN SINCE

THE

BEGINNING

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Greenhouse, and friendly

to the farmers with the D.C.

covered, C. D. C.

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TO
HIS VVORTHY
FRIEND MASTER
VVILLIAM ENGLEBERT
ESQVIRE, HEALTH
and Happinesse.

S I R,

I Have read of an ancient custom used amongst the Heathens, that when they brought their sacrifices into the Temple, they brought therewith all such receipts of medicines for diseases, as they had found out by experience, and there delivered them

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them to be preserved for the perpetuall benefit of their posteritie: their consciences perswading them that their Sacrifices would be better accepted therefore, and that it was a wicked deed to let such knowledge die with them, which might do so much good to others: as for the action, I think so well of it, as I am minded to make it my paterne: and therefore desire that under your patronage I may bring in my receit, containing a medicine, no doubt, for innumerable diseases; as taking away the fundamentall cause thereof, to wit, indigence: which by causing of the mindes sadnesse produceth Melancholious bloud and humours, the fountaine of the diseases of these times; the diseases thus caused kill by distance of time: cordials do but deferre the time: there is no approved medicine but this, in an over-peopled Common-wealth, to wit, good improvements of the earth; which may be effected by the new inventions contained in this Booke: and there is nothing wanting but willing mindes to make this
Coun-

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Countrey the Paradise of the World; if Gentlemen of qualitie would be pleased to begin first, and to lay the corner Stone of this building, all would follow without question: for that gaine, the Loadstone of the World, being laid a little open by practise, would draw the rest: there is no cause that I know why they should be slacke in it: there be a great number of Parishes within my knowledge, and without question infinite more that I know not, where the Landlord by laying out of his money upon these improvements may gaine double as much, as by purchasing of new Lands: also the Parsons Tithes of many things may be doubled; and the inhabitants, though much increased, may live better then before. If this be not a better cure for an over-peopled Common-wealth, then to make violent incursions upon others territories, as is too frequent, I referre the matter to all mens judgements: the whole world is all of one Gods making, and no question is or should be one body Politique; wherein

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wherein to use Phlebotomic when there is no other meanes ready, is as foolish as to doe the same thing in Bodies naturall, also there is no disparagement to men of qualitie to take this worke in hand: for many men of eminent dignitie have laboured in these affaires, amongst which let *Dioclesian* the Emperour serve for brevitie sake in this place: who when he had resigned his Scepter, could finde no such pleasure and contentment in anything, as he did in the planting and graffing of trees, and in the Sowing, and Setting of profitable Seeds: and surely it is a wonderfull delectation to see that the earths fatnesse (being the Treasure, and indeed the Fountaine of all Treasure and Riches in the World,) may be transformed into what forme the Workman listeth: This Treasure is discovered more at large in the Chapter concerning the fertilizing of Land: and is included plentifully in every Element: viz. in the Aire, which is manifest in that the *Camelion* an Animall, and the *Semper-vive* a Plant, can live and
grow

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grow in magnitude and ponderositie without touching any other Element: also in the Water by the infinite increase of Fishes: also in the earth by the infinite and inexhaustible treasure which it produceth continually: onely in the earth it is frequently miscompounded: the reasons are declared at large in this Booke: for it consisteth of a double nature, the one Terrestriall, the other Celestiall or Æthiriall: if either of these predominate, then the earth is barren and bringeth forth nothing that is beneficiall: for if the Æthereall part be not of force and quantitie sufficient, by the heate of the Sunne, to lift up the Terrestriall part, then no fruit thereof springeth. Againe, if the Terrestriall part be not of force to coagulate and harden the other into profitable fruits, then all is turned into smoake, like the accustomed works of Alchymistes: all the skill consisteth in the right compounding of these two substances, which in many places, may be done with such facilitie as is wonderfull: the

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reasons

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reasons hereafter declared are sufficient to turne Plow-men into Philosophers; and to make them to excell their predecessors, even as a learned Physician excelleth an Empericke. For though many notable improvements have been heretofore found out, yet they came more by accident then by good grounds of reason: yet infinitely beneficiall, and therefore not to be despised: for he that found out the way of fertilizing of Land with Lime or Marle, (though by accident) did a more charitable deed in publishing thereof: then if he had built all the Hospitalls in *England*: for the one feedeth and cloatheth a few hungry and naked persons, the other enableth an infinite number both to feed and clothe themselves and others: these things have moved me to bestow much time and charges in these affaires; deeming my attempt to be the most excellent that wit can be employed about; for that these knowledges are more durable then common riches: and no Lawyer can make an estate

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estate so indefefible as an approved and profitable experiment is: the reason why I chose you to be my Patron, is your ripenesse of Iudgement in affaires of this nature: you being a Gentleman that hath spent threescore yeares time in invention to doe good to the State and Commonwealth: and that hath accomplished more profitable experiments then any man in these latter ages: if witnesse be expected, let the noble and bountifull gift of *Queene Elizabeth*, for your full accomplishment of your works projected and never accomplished formerly by any, serve the turne: To conclude, my desire is, that you and all Readers would be pleased to consider that my time being spent in practicall experiments may well deny mee Scholasticall Oratorie: and therefore I desire no more of you, or of any Reader, but that my good meaning may serve instead of *Ciceroes* Oratorie, to smoothe over and dawbe up my imperfections that way: and that the paines and charges being

(a. 2) mine,

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mine, and the profit being to redound to the Readers, if they be so pleased, may serve in stead of *Demosthenes* his eloquence to perswade them to take them thankfully: so I humbly take my leave this twentieth of November, 1638.

Your bounden servant,

GABRIEL PLATTES.



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CHPA. I.

WHerein is manifestly shewed the nature of the subject which we are to worke upon, viz. the terrestriall Globe consisting of earth and water: the situation of it, and the second causes of its stabilitie.

CHAP II.

Wherein is plainly shewed how workemen may be provided for the accomplishing of the enterprise.

CHAP. III.

Wherein is manifestly shewed, how tooles and instruments may bee provided the most commodious way for the worke.

(a 2)

CHAP.

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CHAP. III.

Wherein is shewed how foode, and maintenance for the workmen may be provided, by the industrie of the said workmen.

CHAP. V.

Wherein is shewed that the common way in Husbandry at this time used, will produce in length of time, nothing but povertie and beggerie.

CHAP. VI.

Wherein is shewed that the new Inventions and Improvements contained in this Booke, will produce maintenance for all, though they shall grow never so numerous; whereby the Frontispice of this Booke is cleared from imposture, in that it proclaimeth the treasure to be infinite.

CHAP. VII.

Wherein is declared the manner how to make barren land fertile, and that as the people

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ple increase, so by their industrie their foode may increase, even as twentie Hives of Bees being all industrious, doe live as well, as if there were but one in the same garden.

CHAP. VIII.

Wherein is shewed, how to prevent the blasting of Corne, and that the cause thereof doth not come through thunder and lightning, according to the common opinion, but through the deficiencie of the Husbandmens knowledge.

CHAP. IX.

Wherein is manifestly shewed the cause of the mildew, with the preventions and cures.

CHAP. X.

Wherein is manifestly shewed the cause of the rotting of Sheepe, with the prevention and cure.

CHAP. XI.

*Wherein is shewed, that in these Ages, In-
ventions*

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ventions to save the number of mens workes,
are not profitable to a Common-wealth over-
charged with people, but rather the contrary.

CHAP. XII.

As for the Objections against any thing
contained in this Booke, to free my selfe from
all partialitie toward my owne side, I have here
set them downe all punctually as they have
bin objected by severall Husbandmen, and o-
thers, in sundry conferences.

*Librum hunc de Agriculturâ à G. P.
scriptum typis mandari permitto :*

Julii 28.

Sa. Baker.

1638.



A
DISCOVERIE
OF INFINITE TREASURE
hidden since the worlds beginning,
whereunto all men, of what degree
soever, are friendly invited to be
sharers with the Discourser G. P.

IMust needs confesse that divers of these inventions and improvements contained in this Booke, are not totally hidden from the world at this day : yet in regard that some of them are onely known to my self, others not generally known, and all of them not practised generally ; but the profit thereof which might accrue to the Common wealth, hath hitherto beene lost ; I have been bold to intitle the Book, *A Discovery of infinite Treasure, &c.* for that the intent of the publishing thereof is, that all in generall might receive benefit thereby, and that they might be satisfied so fully before hand, that they might joyn together with one consent to accomplish
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the work more speedily for the generall good of all that are present and alive; and also for the generall good of their posteritie, whose happinesse all men are bound to indeavour themselves by their providence to further; though it should be some charges and labour extraordinarie: for by this meanes shall they shew themselves to be more like to the Creator of all things, who provideth for all Ages, as well as for the present time. If any one shall carpe at any thing contained in this Book; let him be pleased to call to minde the old saying, viz. That a given Horse is not to be looked in the mouth, especially when he hath cost so deare to the giver. I must needs confesse that here is neither Stile nor Composure answerable to the worth of the subject: for which I crave pardon, in regard that my time hath been spent in action and practise, and not in the Schooles. This Book is published for those which through their debonere disposition will accept the Authors good meaning, though it were but painted with a coale; and for such as will take a little paines to spell and put together the same themselves, and expound it to the best advantage for the generall good for which it was intended: to please all is a thing impossible, for that very reason it self, which doth, or at least should rule their pleasures, differeth according to the constitution of the bodies, and also according to the Climates wherein reasonable creatures live; which because it may seeme strange, I will demonstrate by some few experiments amongst many. As for the Climate, the opposition in the determination of divers controversies, doth sufficiently testifie: as for the finall determinations of controversies in severall Climates differing one from another, it doth manifest the other: for the first, it is found that where a question ariseth, there every one disputeth according to his fancie, his constitution causing his will, and his will causing his braines to invent, and forge arguments to make good that which he desireth, be it good or evil: as for the second, the Climate differing causeth the Major part of the Assembly to agree upon a determination which sorteth with the constitutions of the bodies in that Climate: for more
plaine.

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plaine demonstration hereof, let us observe first severall determinations, in severall Climates, of the same question; secondly, let us observe severall determinations in one and the same Climate of the very same question: as for the first, the different determinations betwixt us and the Southerne Countries, about having many wives or but one, sheweth, that the Climates being hotter or colder, do sway the mindes of the disputants: as for the second, the late law for the having of onely one wife, doth demonstrate the coldnesse of the Climate, together with the difficultie of acquiring of maintenance; both which sway the mindes of the disputants here; and as for riches, the things most desired, are they not striven for according to the naturall desire of the parties affected to them? Is it not manifest that many wise and prudent men have despised multitude of riches and honours; and other have affected the same most earnestly, and accomplished them with much danger and difficultie; and these have thought one another mad or foolish, for that they were of severall opinions, caused by their divers constitutions which swayed their reasons with such violence, that their judgments were hood-winked? And is it not manifest also, that many mischievous contentions have risen between parties in the same Climate, and betweene severall Countries in divers Climates, about frivolous questions, where neither partie hath had truth on their side, though they both thought they had it infallibly: like our hot *Apocalyps* men, and fierce expounders of *Daniel*, who are sure, in their owne conceit, that they have such divine revelations, that they cannot possibly be deceived. Of this nature are the most part of the deceptions in the world at this time; which are to be pitied rather then punished, for that they differ from wicked intended deceptions; even as betweene chance-medley and wilfull murder: he that could undeceive the deceived by laying open to him his folly, might do more good in the world then all the lawes hitherto made: for men would not goe against reason rectified, unlesse it were some few miscreants. As for my part, my will is good; but I have neither much learning,

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neither am made fit for it by nature: for the writing of these few lines hath prejudiced me in my health, more than many yeares spent in corporall practise: wherefore I desire all Schollers to endeavour to performe my wants, and by their learning to fulfill my want of learning, and to studie to promote my good intents: for I can but shew what I would say if I could speake; and for their so doing their reward is ready: for I have knowne the Tithes in one parish improved twenty pound *per annum*, in one Parsons age, through his good perswasion to the people to be industrious in the planting and grafting of fruit-trees onely: and then the whole parish must needs gaine two hundred pound *per annum*: and there being in *England* about ten thousand parishes, it may be conjectured what benefit may accrue for the generall good of all the Land, viz. about ten thousand times two hundred pound *per annum*: and also what benefit may accrue, if all my inventions and improvements shall be generally put in practise, this being one of the least of very many: also their honour, reputation and respect shall be doubled by furthering of this pious worke, whereby the working poore may be so well imployed, that the impotent poore will be easily mainteined; and for my requitall, I desire no more, but that they will remember me and my posteritie in their prayers for the heavenly benediction: as for other gratuitie, I am not so necessitated as to make begging letters, though I be not possessed of any great estate: for to deale plainly and truely with the world, I know no imperfection in my selfe, but that, if I were minded to acquire, governe, and conserve a great estate with that trouble that some of my friends doe undergoe, I could have it; but not making that my *summum bonum*, I am resolved, that unles it come with more ease, I had rather be without it: and herein I challenge no immunitie from being deceived like others; for my reason hath deceived me so many times, that I will trust it no more, unlesse it be confirmed and made manifest by experience; and if many more were of my mind, I suppose that the world would be lesse fooled by conceits and fancies, and would not be deluded so sottishly to strive and
undoe

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undoe themselves in the breaking of the generall bond of peace. For particular fancies, it is a strange thing to see the different dispositions of men, yet all thinke they have good reason for what they doe: as may be seene by the laughing of *Democritus*, and the weeping of *Heracitus*, at one and the same object; and perhaps another spectator would have beene angry at it; and a fourth being of a great minde and a large spheare, would have marvelled that rationall men should be moved at all in their passions for such triviall objects: and it is more strange to see men destroy one another by warres and injuries for triviall fancies, and about matters of so small moment: it argueth a meane love to God, when men will kill their own kinde, the wonderfull workmanship of Gods hands upon so slight grounds; it seemeth to me a very feasible worke to rid the world of those mischievous contentions: for now that the Major part of the Princes are of good and peaceable dispositions; What were it to joyne together so strongly, that their power should be irresistable, and then the noise thereof would conquer the rest without Drummes or Cannons; and Hallelujahs would come in their place: but in this worke the Schollers must play their part, else all will be worse then it was before; for unles the world be unhoodwinked and shewed their follies every way, vices will abound by prosperitie, and love-sonnets and fables will come in the place of Hallelujahs after a small time: for I must needs confesse the truth, that at this time nature is so depraved, that prosperitie will cause destruction to the enjoyers thereof, unlesse their judgements be so rectified, that they may doe the same things for love, that now they doe for feare and want: for want is now the best bridle to restraine vices, and therefore I have not indeavoured to my uttermost skill to bring plenty into the world upon a sudden; but that they may have some sowre sawce to their sweet meat, to keepe them from surfetting, yet is not the industry now required any intolerable thing; for that many of these improvements consist of skill more then of bodily labour; so that no man hath cause to complaine, so long as his fare is

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bettered: yet, howsoever, I could wish that this conclusion were put in practise, that experience might conclude the question. For though ratiōall discourses are subject to failings, yet they give good aime to hit the marke; which was the cause that I, having a strong love to knowledge, addicted my selfe so strongly to trie experiments, judging no knowledge perfect till it was thereby confirmed; yet I found that I prospered best in those practises, wherein I did first profoundly dispute with my selfe *pro & contra*, and was not partiall, but objected and accused the worke as strongly, as if my enemie had done it; and when I was remisse in this, I usually fared just like a suitor in law, who telleth his Lawyer the fairest part of his cause, and concealeth the worst of it, till at length he is overthrowne in his own suite, though his Lawyer were honest and learned. I have sometimes marvelled at my owne folly, in being carried with such a swinge to doe others good, that I have prejudiced my selfe much by it: my foolish pity hath many times caused me to be wittingly and willingly soothed, and to part with my money, rather than to suffer another to be oppressed with extreme want and miserie; and this I did not meereley for very charitie; for it is a double vice to make my selfe more honest then I am: for the chiefe cause was my pronenesse to part with my money, being a thing I so little care for, finding a delectation rather in laughing at the parties mistaking, in thinking he had absolutely Tantalized me with hope of some great advantage, when God knowes, I never expected either gaine or principall againe. I know a man at this day of no meane capacitie, that having a good estate, but not yet very great, for whom I dare sweare, that he would not change estates with the King of *Spaine*, whose dominions are so large, that the Sun never setteth in them; for before it goe downe in his Western dominions, it riseth in some part of his Eastern dominions: these things I would have to be taken notice of, to the intent that mens conceits should be weakened, and that lesse bloud should be shed upon slight grounds, than hath beene heretofore. If any one say that warres and bloudshed are just, for
that

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that it is for the maintenance of Religion and Lawes; I answer, that the fancies of the people in many severall climates, if not in all, bore so great a sway, not only in the making and composing of the Lawes and severall Religions, but also in the embracing and receiving of such as sorted with their fancies; that it seemeth not to be convenient, that the generall Law of Nature should be violated for particular Lawes; nor that the fundamentall points in Religion, which command generall love to God and man, should be neglected for particular differences. I am not sure how this enterprize, for the bringing of the world into a regularitie and uniformitie, will prosper; for it may prove to be a fancie as well as the rest: yet of all conclusions that are yet to be tried, I have the best fancie to it; for that the Major part of the world doe so much desire it, and for the furtherance thereof, if it come to a dead lift, I will try my cunning for some engines of Warre extraordinary, which will make foule worke with such miscreants as shall oppose so worthy a worke, and will cause them to be trampled upon even as the mire in the streets: but to publish these were an execrable villanie, unlesse that a short warre might be sure to end all future quarrels. And what Prince soever shall first engage himself in this enterprize, his honour is sure to be perpetuall; for that all tongues, both present and future, will testifie his heroicall and noble nature; and all histories will record his fame to the worlds end; and this honour will be surely his, whether the designe hit or misse, for that he meant well howsoever.

But to speake according to my conscience purely, I thinke that in regard it is a worke of God and not of man, when the divine pleasure seeth it fit, it will be done by some weake meanes, whereby his glory shall be the more advanced; for men are so apt to be arrogant, that God Almighty will scarce trust them with such an honour. Now for that the old saying is true, That it is dangerous meddling with edge tooles, I will cease this discourse, as seeming somewhat above my Spheare, and addresse my selfe to my plough againe; wherein I shall be sure to doe good, or else no hurt;
unlesse

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unlesse it be to lose my labour in taking paines for unthankfull persons; or else to overshoot my selfe, in striving to bring in plentie and prosperitie into the world too suddenly, before they have learned to use it well, and to governe their fulnesse with moderation; wherein I have not bin altogether remisse in my care, that the mutation might not be too violent and expeditious. And as for Religion, doth not a strong conceited Papist, and a strange conceited Protestant, thinke one another to be mad, and deluded by their fancies? and doth not a Iew thinke the same by them both? and doth not a Turke thinke the like by all the three? and doth not a learned Pagan thinke the like by all the rest, being himselfe madder then any of them? Amongst all Religions which I have perused and looked into, which are not a few, I finde that the Christian Religion doth manifest it selfe to come from God himselfe, by the good discipline thereof, and also by the admirable consolation which it giveth to men in adversitie and affliction, and at the very houre of death; thereby shewing it selfe to be the very salve of God who is all mercy and pitie: yet I could wish that Christians should not be so violent in mainteining it by bloudshed, as they are, but rather take another way more powerfull, and lesse prejudiciall to the generall good: also I could wish that the rest would looke into thier follies, and not be so ready to break the generall bond of peace, and great Law of Nature, for their particular fancies. For if any Scholler should take upon him to mainteine by his Logicke that men might lawfully hate one another, if they should differ from them in opinion; me thinkes I durst undertake him, and would make no great doubt with my small learning to involve him into an unavoidable absurditie; for if this might be done, it would be concluded, that there might be lesse love in the world then is at this present, which in my conceit is a thing that needs not: for the law of Nature doth complie with the generall profite, which this doctrine doth thwart extraordinarily; thereby shewing it selfe to be false and frivolous.

And for a full demonstration of my meaning concerning the

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the great Law of Nature : I affirme it is that which forbid-
deth any man to doe that thing, which is prejudiciall to the
generall good : which is more manifest in that every one
that doth such things, doth hide the same, either by doing it
privily, or by covering the same with pretences : thereby
shewing that his conscience doth forbid him all the while
he is in doing it, unlesse it be where the conscience is not
rightly informed : for then the Conscience stingeth not at
all, as it is manifest by the Pagans, who thought they did
God good service in martyring of the Christians ; and also
by the people who thought the like in killing the Prophets,
Apostles, and Christ himselfe.

For the Conscience is guided by the science ; if the science
be a conceited fancie, then the Conscience is quiet ; though
it provoke men to doe execrable actions.

But how men should be so blinded to doe things against
the generall good, seemeth to me a strange thing ; in regard
that all Religions agree in this point, that we are not to doe
that to another, which we would not have done to our
selves : Now who would have himselfe killed, or injured,
for his private opinion ? therefore in my conceite, he ought
not to doe the same to another, much lesse to destroy the
wonderfull workmanship of God for that it pleaseth not his
fancie.

If any man should make a pot, or a glasse, or other whim-
sey ; he would take it ill if his inferiour should breake the
same, for that it pleaseth not his fancie.

Therefore why should he thinke that he can please God
Almightie, in doing a thing of the verie like nature ?

I have made this tedious digression, not for any great skill
in Divinitie that I pretend to have ; but to shew to the
world, that I am as others are, a little troubled with my
phantasticall conceit ; and wish, as others doe, that all the
world were of my opinion : for then we would not for any
particular opinion, whatsoever, forgoe the great prosperitie
and happinesse, which peace would bring us ; but would
breake our swords, and instruments of Warre, into Plough-

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shares,

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shares, and other instruments of Husbandrie; and would spend the charges of Gunpowder, Shot, &c. in the building, repairing, and beautifying of Churches; and turne the noise of Drummes and Cannons, into Hallelujahs; and would according to my naturall pronenesse, try conclusion, whether Peace, or Warre, were better.

Yet howsoever it cometh to passe in the generall, I would be glad that this particular Kingdome, would be a little ruled by my fancie; which in this point is not different from the vulgar, to whom every contrarie opinion seemeth frivolous, and ridiculous: as the opinion of those doth to me, who contend for trifles, and had rather forgoe their future happinesse, than lose an inch of ground in standing out for their strong conceited opinions: yea, verily they seeme to me as ridiculous, and childish, as for Boyes to fall together by the eares, and teare one anothers clothes, and give one another bloody noses about Cherry-stones, points, pinnes, and other trifles which they play for.

Wherein, I am just like the Inhabitants in *China*, who suppose that they have two eyes, and all others have but one; therein manifesting their strong conceit of their owne wisdom; for that they thinke they know more than all the World besides.

Yet I conceive my good meaning may beare me out in it; for that I conceiving my selfe to see the Kingdome post away apace into povertie and want, am willing to shew my good will for the prevention of such a mischiefe.

And I am not wedded to my fancie so much, but that I wish every one to take better counsell when he may have it, and in the meane time, to accept of mine, rather than of worse.

And where good counsell is wanting, let every one tell himselfe the old fable of *Æsop*, concerning the contention betwixt the members and the belly; and let him set before him the successe of their discord; and also the happinesse that they had enjoyed by concord; and let it move them to joyne together for all their profits; and let them thinke as I
thinke,

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thinke, till they be better advised; that there is more wit in that fable, then is in an hundred of our new fabulous fancies, and strong conceited whimsies.

And whereas the old saying is true, That need is the whetstone of wit; let us be wiser than our Predecessours, and whet our wits with the thought of it; and studie to prevent neede before it cometh: for that the prevention of a disease is better than the cure afterwards.

And let us not make so great a difference betweene providence and prudence as some doe; and if either be preferred, let providence goe before: so will prudence be lesse troubled when he cometh to doe his dutie; and lesse repentance will serve, when a vice hath beene stayed before it be actually committed.

And let me not totally destroy fancie, for that it is cause of much good sometimes: for Birds would not take so much care and paines to feede their young ones, but that every one thinketh his owne little one to be the fairest: and I would not have spent so much money, labour, and time; but to fulfill my fancie.

For I have as small reason to doe it as any man in *England*, having received many wrongs and injuries, by divers persons whom I freely forgive; and desire God Almighty to doe the like: for it was not they that did it, but that wicked root Covetousnesse, which got possession of their hearts: with whom I can never be reconciled; but have vowed the ruine thereof, and cannot be stayed with any perswasion whatsoever.

And having tried divers waies to accomplish my enterprise, can finde none, but to choake, suffocate, and make it to surfeit to death with the food that it most loveth.

And it is a strange thing to see that I cannot rule my passion, but to run headlong upon it; though I see plainly, that pride and luxurie are like to grow in the roome of it.

And that I shall be just like to a Tinker that stoppeth one hole and maketh two greater; and were it not for feare

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of this mischief; I would declare something that here shall be omitted.

For I would be loath to be so bad a Physitian, as to have no more care in the Composition of my medicine, but that the hot ingredients thereof should cure an Ague, by putting the patient into a Feaver being a more dangerous disease.

Amongst all my Observations in the workes of nature, I could never finde so exquisite a Modell or resemblance of a well ordered and flourishing Common-wealth, as is an hive of Bees; who in these two principall points doe so farre excell men, that they may well goe to Schoole to them: for first they are all industrious, and suffer no drones to remaine amongst them, and by this meanes their well living is no whit diminished by growing numerous: Secondly, they are all bent to worke for the generall good, which is manifestly seene by this one remarkable point: for when any one hath fortune to finde out a pot or vessell of honey, he doth not like men eate it all up himselfe; but forthwith he goeth home and telleth his fellowes whom he guideth to the treasure which he hath found: and there they worke with one consent, till they have carried it to their owne hives if they be not letted by force: I being schooled by this commendable example, have published this Discovery, which must needs prove some huge Creature, for that it hath been threescore and foureteene yeares betweene the conception and the birth: this treasure consisteth of improvements in Husbandry; whereof the least is inestimable and infinite, for that thereby so many lives present and future are maintained; these partly by a Booke given me by one of my Auncestors, containing all the remarkable observations for fittie yeares of the weather: the plentie and scarcitie: the cheapnesse and dearenesse: with all accidentall occurrences, and the naturall causes of the same; and partly by my owne observations and experiments for the space of 24 yeares, I have by the blessing of God found out, which if I should conceale, and not publish, I conceive that I did commit as execrable a villanie, and

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and as much defile my conscience, as if I should see a number of men in danger of drowning, and should not lend them my hand to helpe them: if any one shall caluminate these improvements with the name of innovations; let him be pleased to remember himselfe, that such innovations as these have beene accustomed in all ancient times, as the people grew more and more numerous, to be put in practise: for three severall times the people growing too numerous for their maintenance, God hath given understanding to men to improve the earth in such a wonderfull manner, that it was able to maintaine double the number, and so he that made mouthes, sent meat by teaching them understanding how to get it: for when there were but few, they were maintained by Fish, Fowle, Venison, and Fruits; freely provided by Nature: but when they grew too numerous for that food, they found out the Spade and used industry to augment their food by their indeavours: then they growing too numerous againe, were compelled to use the plough, the chiefest of all engines, and happily found out: whereby all Commonwealths have ever since beene maintained, and at length this invention would not serve the turne neither without new skill in the using of it: for at the first they used to till the Land till the fatnesse thereof was spent, and so to let it lye a long time to gather fatnesse againe of it selfe; and in the meane time to till fresh Land: but when they grew too numerous for the food gotten that way, they were compelled to finde out the fallowing and manuring of Land: by which invention the Land recovered more fatnesse in one yeare, then before in many yeares; and so a Countrey would maintaine double the number of people more then before: now the people are growne numerous againe, requiring new improvements which are discovered in this little Booke, and shall be shewed by irrefragable demonstration, and infallible experience; also it shall be made manifest, that by the Common course of Husbandry used at this day, the barrennesse doth by little and little increase, and the fertilitie decrease every yeare more and more, which in regard that the people doe increase

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wonderfully, must needs at length produce an horrible mischief, and cause the Common-wealth to be oppressed with povertie and beggery.

When as by these new inventions and improvements being industriously practised, their wealth shall not be diminished, but contrary wayes wonderfully increased, though the people shall grow wonderfully numerous.

And this businesse is not to be sleightly thought upon, for so much as Husbandry is the very nerve and sinew, which holdeth together all the joynts of a Monarchy.

Neither is Invention to be lightly regarded: for all workmanship without invention, resolveth it selfe into the workmans belly, as may be manifestly seene: for before the plough was invented, and before Horses, Oxen, and cattell were taught to doe the works which men did before, all their labour came to nothing, but onely to fill the belly; but since that time, by the benefit of these and other inventions, we see what Castles have beene built in time of Warres, and what Churches in time of Peace, what famous Townes, Cities, and Schooles, and other things conducible for the Common good: also, by this meanes men were spared from servile labours, that they might attaine to knowledge to be Statesmen, Clergie men, Lawyers, Physicians, Merchants, Tradesmen, &c. without which no Common-wealth can subsist.

And for so much as the new world called America, doth for the present give aide and succour for the maintenance of the surplusage of people increased in those Countreyes; yet in regard that the finding of new worlds, is not like to be a perpetuall trade; it seemeth to agree with providence, to begin to improve the Lands formerly peopled, in such manner that by their industry there may be raised maintenance for double the number.

Which to performe is no hard taske, in regard that all treasure and riches are nothing but congealed vapours: for what is corne, and fruits, the chiefe of all riches, but the fatnesse of the earth; *Jacobs* blessing elevated by the heate of the Sunne, and turned into vapour by the helpe of the Univerfall

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versall spirit of the world, then drawne together by the Adamantine vertue of the Seeds, and Plants, and so congealed into the same forme? and what is Silke, Velvet, fine Clothes, &c. but the vapours of Animalls congealed in the superficies of their bodies, where the Animall heate was able to elevate them no further? and if any man will hazard a wager upon it, I will undertake to shew by irrefragable demonstration & experience, the great Test and onely triall wherby truth is distinguished from imposture; That Gold that great Commander, is nothing else but the said fatnesse of the earth, elevated by the said universall spirit, and after depuration congealed into that splendorous Body.

Yet I would be loath that this should animate men to spend their goods this way as many have done; Therefore I will them to understand, that though I affirme the Art of Gold making to be true, yet I doe not affirme it to be lucrous in these times.

For the difference oft-times may make a gainfull art to be not gainfull: for when an Earledome, or Province was morgaged for a thousand Markes, as we finde in credible Histories they were; then gold making might be a profitable Science, and yet nothing worth in these times, when as one Farme will buy a thousand Markes.

By this meanes, the wise and godly men which have written of this Art, are cleared of aspersions, and impostures; for that they were no Prophets to foretell these mutations of times.

Now seeing that all treasures are nothing but congealed vapours, there resteth nothing to be done for the performing of my undertaking, but to shew the Art of doing the worke, and then the treasure is discovered according to the Frontispiece of this booke: which worke is plainly made manifest in these ensuing lines. And whereas all men are invited to be sharers, it concerneth me to shew how they shall receive benefit thereby; which thus I make good.

Though the Husbandman carry away the greatest share, as they are most worthy; yet part cometh to the poore worke-

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workemen for their employments; and part to the Clergie by the improvements of their Tithes; and part to the Gentrie by the improvement of their Lands and Rents; and the King hath no cause to doubt his part to come short: for if the subjects shall be rich, they will be ready, both with purse and person, to defend and offend upon all occasions: even as a man having good store of treasure, being assaulted by thieves, will fight more valiantly then he that hath nothing to lose: and then they will not pay their money with such grudging as now they doe; for that a little preserveth a great deale: and as for the Kings honour, it will be then as much more excellent then now, by reason of the heartie affection of the honourer; as a piece of true gold differeth from a counterfeit piece.

Also the Tradesmen whom it least concerneth, shall be sharers too; for when there is such store of good employments in the Countrey; the Cities will not be so overcharged with multitude of Tradesmen; and more then that, they will have greater dealings, and better employment.

Also the impotent poore; as old, lame, blind; also fatherlesse, strangers, widowes, prisoners, and succourlesse people will have share: for then their number will be but very few, in comparison of what is now: also charitie will increase together with abilitie.

I dare undertake to shew a way how the working poore may be employed in these new improvements, in such manner that they may live twice aswell as they doe now; and yet notwithstanding, there may issue out of the benefit of their labours, sufficient maintenance for the impotent poore, and all others above mentioned.

Which worke will be almost as chatibable and good, as if I should build an Almes house in every Parish, and give perpetuall maintenance to the same.

And of all sharers mine owne part will be the least, for I am like to be a loser by the bargaine in my wealth; onely I shall die with a more quiet conscience, which is better then wealth: for my knowledge how to get wealth, will be con-
founded

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founded by this new alteration; for by my long and diligent observations in these affaires, I am growne able to discern and foresee the scarcitie, and unavoidable dearenesse of many things before every vulgar person; by which meanes I could easily raise to my selfe, and to my posteritie, more wealth then can any way accrue to me by the publishing of these my Inventions and Improvements, which will cause such a mutation, that all my former observations will stand me in little stead for such a purpose; yet that all succeeding Ages shall know, that once a man did change so great wealth for a quiet conscience; I will proceed to the uttermost of my skill, to make all my knowledge to be every mans, and to forgoe my owne gaine, for the benefit of many.

And though here will be little found in this Booke, but what every understanding man knoweth to be true; yet I hope I shall performe sundry good offices: for to some I shall be but a remembrancer of what they knew before, but forgot to practise it: to some I shall be as a Midwife, who though she neither conceiveth, nor beareth the child; yet performeth a good office in facilitating the birth of it: to some I shall help to bring to ripenesse certaine seeds of knowledge, planted in their hearts by the Finger of God in their creation.

And as for my owne Inventions and experiments, I would be loath, that having pretended to give men so much wealth and treasure, I should bring any man into losse and damage of that which he had before. Therefore in regard that no certaine rule can be given for so variable a worke; I wish that every man may trie the truth in a few Perches of Land; and when he hath found out his fit seed, his fit composition of manure, his fit depth of planting and setting, and hath discovered all inconveniences, and knoweth how to avoid them; then to goe to worke in greater quantities.

For we see that though all riches are nothing but congealed vapours, yet the aire in *Spaine* and hot Countries, is apt to

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be congealed into some manner of riches, and the aire in these Northern Countries is apt to be congealed into other manner of riches : also the vapours arising out of Clay ground are apt for some things, and the vapours of sandie ground are apt for other things, and all ground is fit for some use or other : for God and Nature made nothing in vaine, and therefore the saying being found true, *non omnis fert omnia tellus*, it is not so ridiculous a thing as the world doth repute it, for men sometimes to try conclusions : for if people did not increase; I confesse that then the old waies were best and surest : but in regard that new numbers grow daily, therefore it behoo- veth us to have new inventions and improvements, whereby they may live by their industry and not by shifts and unjust devices as now they are forced to use.

For though the new Plantations were happily found, and have disburdened these Countries of the extreame surplusage of people; yet we see by experience, that they are as it were squeezed out by force of povertie and want, and most of them try all their shifts before their departure, which causeth such store of shifts to be put in practise as are now used, whereas by honest industry they might helpe themselves, being set in a good way, with as much lesse trouble to their minds, as their industry would bring trouble to their bodies.

And one of the principall Motives which mooved me to put out this Booke, was a grieve of minde to see some indifferent well disposed persons, to lye and shift even as a thiefe that stealeth a Sheepe for very hunger : with whom I have conferred about it, and found that they could get no convenient imployment, at least answerable to their nature and education.

Wherefore my studie hath beene to finde out inventions of severall natures; whereof some of them consist of skill, as much as upon bodily labour; whereby men and women of good birth may without disgrace acquire their livings.

Now, for so much as it is plaine that need causeth shifts, and also it is as plaine, that the saying is true in Philosophy,
sublata

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sublata causa tollitur effectus: I will summe up my Booke into one grosse summe and conclude; that if I take away need, the shifts will be gone.

Wherein I will put my selfe upon the great Test, viz. experience, whereupon my drosse will be burned away, and nothing but Gold will remaine; for that Test suffereth no imposture.

And I make no question, but there will be found some drosse, yet if the greater part prove to be Gold, my request is, that all Readers will play the Refiners; and if they finde more Gold then drosse, then I am Gold Oare at the least, which is Mine Royall, though not so pure Gold as I desire to be.

And so I end my preamble, thinking the time as long as the Readers till I be at worke, and shew my skill in performing my undertaking in forme following.

And my first worke shall be to divide my Booke into twelve Chapters, for the ease of the Readers mindes, in regard that their bodies are to be imployed in the enterprise more then their mindes, following the example of former inventors, who discharged that part: for *Solomon*, and all other Wisemen never bore their disciples in hand with miracles, but evermore stirred them up to industry, shewing that it was accustomed that God Almighty did performe his providence usually by teaching men understanding to acquire their livings by industry, and seldome rained Manna, or fed them miraculously.



CHAP. I.

Wherein is manifestly shewed the nature of the subject which we are to worke upon, viz. the terrestriall Globe consisting of earth and water: the situation of it, and the second causes of its stabilitie.

THE Terrestriall Globe composed of Earth & Water, being the Subject which we are to worke upon, is nothing else but the grosse-nesse and residence of the Elements, the wombe of all seeds and plants, which we are to make use of in our new husbandry, wonderfully placed in the middle of the vaste Element of Aire, not by the power onely of the mightie Creator: but also by his wisdom and exquisite artifice: for the Magneticke vertue betwixt it and the celestiaall Orbes, is so exquisitely proportioned, in number, weight, and measure; that no side is over-matched with vertue attractive or expulsive; therefore it abideth in the middle of the universe, with as great stability,

as if it had a supporter, such a one as our understanding is capable of: if men could observe proportion, they might frame a kinde of module thereof, by hanging a bullet of iron covered with clay, in the middle of a Speare, beset about with Loadstones of equall vertue attractive: but I conceive time may be better spent, in admiring the wonderfull power, wisdom, and exquisite artifice of the mightie Creator, and also in letting this glorious Fabricke of the universe be to us all, the universall Preacher of Divinitie, to teach us to adore and love the Creator thereof: in which divine worship, I could desire that there might be a new invention or improvement in two respects: First, as the common way used is, to bow the knee of the body, so the new way should be to bow the knee of the heart: and as the common way now used is, to be every one for himselfe, so the new way should be, to be for the generall good of every one: if the last of these be not performed, the first cannot: for it is impossible that he can honour and love God aright, which doth not love all his brethren whom God hath created upon the face of the earth; and if he love them, he will worke for the generall good of them all, which if he doe not, then his love is fained, and his Religion is vanitie.

And had I eloquence or learning, I would presse this point with all my force: for that all the inventions and improvements in this booke, are not to be compared to this one for extellencie; neither is there any great hope that the rest will succeed well, if this doe not precede: for suppose that men for meere lucre should be industrious in this new husbandry;

bandry, yet if they omit these two first new inventions, they may well feare the successe; for that they have left the prime Workman out of the field, to wit, God Almighty, without whose blessing all is vanitie and lost labour: whereas on the other side, if they shall first learne these two new inventions in the service of God and love to men, (by which, and by no other way then by working for the generall good, the sinceritie thereof can possibly be discerned) then will they all with one consent worke cheerefully in this new husbandry, and the chiefeft happinesse of all will be; that then God Almighty will blesse their labours, by sending the former and the latter raine in due season, whereby their harvest shall be doubled in quantity: for moderate raine fatneth the earth, but too much or too little causeth barrenesse; as may be seene by this last yeares successe where the want of a little raine presently after the Spring seed time, hindred this kingdome above the value of an hundred Subsidies, and also one flood comming by immoderate raine, did as all floods usually doe, viz. carry in the belly of the water into the Sea, as much fatnesse as would produce here in England the value of one hundred Subsidies more.

By which passages, we may see how little it is to purpose to strive against the streame, viz. to thinke by our owne industry alone, without the heavenly benediction, to prosper in our labours.

Therefore let us, having the pith and substance of Religion, practise the same sincerely, and so adresse our selves to our worke, leaving the particular differences in Religion, to the disputations and determi-

determinations of Schooles, and in so doing both we and the Schooles shall fare the better for it.

And for the more powerfull cheering up of all men to these two duties, let us consider well of the wonderfull power of God accompanied with his admirable wisdom and exquisite Artifice in the establishing of the Sea in his place, which is not by vertue of the Sea banks as it is in fresh rivers, as vulgar people doe imagine, though the Sea banks doe somewhat restraine the great libertie that the Sea would have: yet is the sea heaped up into a sphericall forme round like a Ball, by the attractive and expulsive vertues of both the celestiaall orbes, and the terrestriall orbe, wherein the one vertue doth not over-match the other at all, save onely that the Moon chief governess thereof, doth a little over-sway the rest cooperating with her, but withall giving her the predominancy; whereby she causeth the tides to ebbe and flow as we see: which worke though it seeme great in the narrow Seas, yet in the maine Ocean, it is scarce perceptible, but even as it were the rowling of a Bullet, so very little, that the spectators perceive it not to be rowled at all.

Which heaping up of the Sea is manifestly seene by this demonstration: let a Ship goe out from the Shore, and about ten miles distance the sphericall forme of the Sea will hide from your sight, standing on the Shore all the while, about fiftie foot of her, and also he that in the Ship taketh notice of this thing, will finde that as he departeth from the Shore, so if he will be still desirous to see the Shore, he will be forced to climbe up the Mast higher and higher, as the Ship goeth further from the Shore,
untill

untill at length he cannot see the Land at all, by reason of the sphericall Compasse of the water, though he climbe up to the top of the Mast.

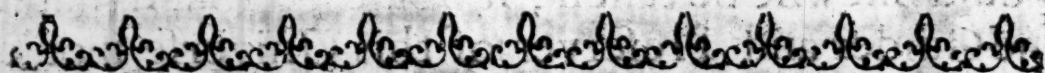
Whereby it appeareth plainly, that the Sea acquireth his deepnesse, as well by this heaping of it selfe together above the earth, as by concaving it selfe in the earth.

For if a streight line should be drawne from the Sea banks at Mexico to the Sea banks in the Easternne coasts, and the measure of the depth of the water in the middle of the Ocean to that line, should likewise be taken, it would be found that if the Guider and Preserver of this Universe should be remisse never so little, and suffer the water to sinke flat like the fresh rivers, we should be all drowned in an instant.

Which wonder produceth to me another wonder almost as great, which is, that rationall men should be so stupid as not to stand in awe of God the mightie Creator, who with one frowne is able to destroy them all so easily, or should goe about to dissemble so with him (who knoweth all things) with their complementall service and honour to him, for either they must needs goe about to cosen him, or else they must according to his will love all creatures which he hath created, which love must needs be fained, unlesse it be manifested by working for the generall good of them all, and not onely of all that are created, but of those which shall come afterwards.

And if any shall be found remisse or refractory in wishing well to these proceedings, appearing so evidently to be for the generall good of all the inhabitants

bitants upon this terrestriall Globe, or shall use any indirect meanes by depopulating townes or dwelling houses, or by unjust making warres whereby the people shall be decreased: it being so manifestly shewed, that there is no such need, but that there is sufficient maintenance to be had for them, though they shall increase and grow never so numerous: These men of which sort I have heard of, now hitherto doe demonstrate to God and the world their ignoble nature, and their beastiall swinish and viperous dispositions.



CHAP. II.

Wherein is plainly shewed how workemen may be provided for the accomplishing of the enterprise.



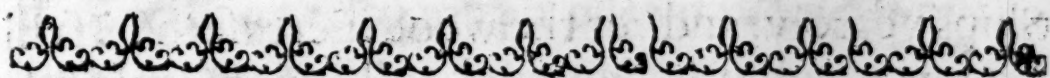
AS for workmen for this businesse, I make no question but that all working poore will be ready upon the first summons to come to worke, if so be they may receive maintenance for the same, which now they want extreamely; which I would advise all Landlords to disburse, in regard that they shall receive an improvement in their rents, of farre more value then the money disbursed would yeeld by purchase of new lands; yet in regard that these are not sufficient, I could wish that many others might be imployed which might best be spared in the common-wealth; of which
 sort

fort are liars, shifters, and deceivers of others, and which doe now eat the bread of other mens labours by their subtilties; but in regard we are to make use of their bodies for labour, therefore their conquest is fit to be accomplished by stratagem, which is a difficult worke to deceive the deceiver: I have studied much to finde out an Invention how to effect this enterprise, and finde, that as receivers make theeves; so temerarious beleevers make liars: and to redresse this mischief, I have sometimes thought it the best way to beleeve no man: whereupon, this inavoidable inconvenience followed; that many times we should reject the truth as well as lies and deceit: for I finde that truth spoken plainly, doth echo in the minde of the hearers, saying the same things over againe: but this is the mischief, that so few hearers have understanding to judge which is true, and which is false: for where the hearers want ability to judge, there lies and deceit make the same echo, which truth doth in the former: so while these persons can finde any shallow brain'd beleevers, there is small hope that we shall winne them to be labourers in our new husbandrie: therefore amongst all stratagems to winne the field of them, I finde none like unto my first invention contained in the first Chapter, viz. to bow the knee of the heart in the roome of the usuall bowing of the knee of the body: and withall, to be humble petitioners to the donor of wisdom, and understanding, to send the light of truth, and the knowledge of truth into the world plentifully: then doe these

persons become suitors to be admitted to be workmen in our new husbandrie, being defeated in their former trades: so shall we have workmen enough to accomplish our enterprize for the present time; and as for the future, there will be such an exquisite proceeding, that it will be as difficult a thing to discern whether the people increasing cause the fertilitie to increase; or whether the fertilitie increasing cause the people to increase; as it is for a Philosopher to finde out by argumentation whether the egge or the bird was first. For the numerous increase of people diminisheth not their maintenance so long as they are all industrious, no more then twenty hives of Bees are impoverished more then if there were but one in the same garden, so long as they are all industrious, and suffer no drones to live among them.

But because that in the meane time some shall reap benefit by avoiding these deceivers, I wil shew a politicall invention how to finde out their knaverie, which is thus made manifest: even as he that hath good gold to sell, will goe to the most expert Goldsmiths, refiners, or say Masters, and will by that meanes get the best price: but contrariwise, he that hath counterfeit mettall will go to those which are more ignorant (fearing the greatest) and there make their markets: even so he that hath a good project, and truth on his side, will goe with it to the most able men of judgement; wherers the deceivers will goe to those of the weakest judgement, thereby winning facilitie to deceive: therefore, the safest way is for every
man

man to doubt his owne judgement; and not to be too rash in giving credence, till the greatest experience, hath determined the doubt.



CHAP. III.

Wherein is manifestly shewed, how tooles and instruments may be provided the most commodious way for the worke.

AS for Tooles and Instruments, though they be made of two materials chiefly, to wit, wood, and iron; yet is wood the chiefe thing to be provided for, in regard that without it, no iron can be provided; for I finde by experience, that all attempts to make iron with Seacoale or other coales, are vanitie: for though it may be melted that way, yet the good metalllicall qualitie of the iron is destroyed, or at least the greatest part of it; for I finde by experience an Arsenicall or Antimoniall qualitie in all subterraneall substances combustible, both which are poisons to iron.

Now the multitude of Timber brought yearly from *Norway*, and other parts, doe plainly demonstrate the scarcitie thereof here: also it may be conjectured what a miserable case the Kingdome will be plunged into about an Age or two hence, for want of Timber.

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There is a Law in *Spaine*, that he that cutteth downe a tree, shall plant three young ones for it; and by this meanes there are builded in two Provinces, both not so great as *Yorkeshire*, twentie Ships yearely, and yet the wood increaseth: If this Law were observed here, how happie would it be for the posteritie? the charge is little, there is nothing wanting but one of my first inventions; to wit, love manifested, by working for the generall good; not onely of all that are now alive; but also of those that shall come after. And I see no reason why Landlords should not contract with their tenants, to put this worke in practise diligently; for then their rents will be more and more improved every yeare: and if this be omitted, their rents will be diminished in future time.

Now, for the improvement of this worke; I would have all Timber trees planted in hedgerowes, and by this means no ground will be lost: but all woods and thornie grounds may be turned into fruitfull fields and pastures, and are apt to be made fertile by my new inventions: besides, the planting of the Timber trees in hedgerowes, bringeth a double commoditie; for they are not onely an helpe to divide the land of industrious persons, from the land of the idle, that every one may enjoy the fruit of his owne labours; but also they will be notable shelter for the Cattle in Winter, to preserve them from cold stormes; and no lesse commodious, to keepe them from the heate of Summer.

And if any one shall object against the multitude
of

of ground lost by hedgerowes ; let him remember himselfe, that every hedge gaineth tentimes his proportion of land ; for that the Cattle in hot weather are thereby shrouded ; which else would destroy more with their feet, then they eat with their mouthes, by their gadding, and running up and downe, whereby that every Beast eateth with five mouthes : also they lose more fatnesse in one hot day, then they gaine in three coole dayes ; which is a thing to be considered upon.

And I dare undertake to extract more riches by ten times unto the ground where any tree groweth out of an hedgerow, then it will be worth when it cometh to be a tree fit for use ; therefore I advise all men, to kill many Birds with one boulte ; for in the hedgerowes a tree spreadeth, fenceth, sheltereth, shadoweth, and increaseth in magnitude altogether.

And there is no question, but the Tenants will be better able to live, and pay their rents, when they have neither houseboote, ploughboote, nor fireboote to buy ; according to the old phrase in ancient Evidences ; but have all in their owne grounds, as they had in ancient time, before this improvident husbandry was used : for now Husbandmen are turned prodigals, wasting all in their owne time, without care or providence for their posteritie.

And as in Cities, their rents are improved one-ly by the multitude of chambers, and roomes in the Houses to be let ; because that there the rents
are

are onely given, for the conveniencie of habitation: so in the Countrey, on the contrary, the habitation being least regarded, the rents are raised out of the improvements of the land; which if it be well stored with timber trees, and fruit trees, bringeth no little benefit to both Landlord and Tenant.

Therefore seeing that if Timber trees should be planted thick in forme of a Wood; there would be more losse in the land before the trees come to perfection, then the trees would be worth; considering the length of time, and also how the land might be improved in the meane time: therefore I would have all trees planted in hedgerowes, for the reasons heretofore mentioned.

Also, I have knowne an Orchard of ten Acres of ground, which might have beene so improved otherwayes, that it would have mainteined a familie of ten persons; if all the trees had beene transplanted into the hedgerowes, according to the practice used in Worcester, and Herefordshires, and in divers places beyond the Seas. And if this practise was once generally used, there would be no more danger of stealing, then there is of wheat, or of grapes; or of these fruits where this practise is generall through the Countrey.

Now for this purpose, it behooveth every Farmer to have a little Nurcery, where to sow, or set Acornes, Ash-keyes, Hawes, Plumbe-stones, Chery-stones, kernels of Apples, Peares, and all manner of fruits fit for his Climate. And for new Invention let him choose the best fruits; For Nature

ture suffereth her Elements to be congealed into good fruits, as gladly as into bad.

Also, when he setteth his small trees, at the first, let him ramme downe the earth sad below, and lighter towards the superficies; that so the rootes may have a better fabrick, and may spread, through all the points of the Compasse, or the more of them the better, though not all; and may not point downewards, towards the barren earth, but spread in the rich mould, the better to draw nutriment.

And when any man would plant twentie fruite trees, let him set fourtie kernels; and when he seeth how they prove, he may choose the kindly ones, and throw away the other; and not cumber the grounds with them.

And let him choose neither those that have very long joynts, nor those that have very short ones, but the middle sort; for the long joynted plants are apt to spend themselves into leaves, and branches; and the short joynted ones will be but dwarfe-trees.

And let him choose his grafts precisely; for he shall be sure to finde the Proverbe true in this worke, viz. Such a Mother, such a daughter.

Whereas divers attempts have beene made for the preserving of fruits from falling in the Spring time, and have not taken that good effect which was hoped for; I will declare my experience therein, by laying open the cause thereof more plainely, then ever I could finde written in

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any booke, or discoursed of by any man in all my travels.

And first, I finde the cause thereof to be double; the one by frosts in *May*, the other by reason that the Trees are repleat with a more flegmaticke, and waterish juice then is convenient.

To redresse the first, let there be made an earthen pot, like a little Still, to be hanged with a coard in every tree, in frosty nights; halfe a pecke of small coales, which will cost but an halfe-peny, will give an aire all night, if the pot be covered with a tile, and some wet hay be laid upon it.

And some yeares, two or three nights will be sufficient; some yeares there will need none at all: the way to know when it will freeze, may be found by the weather-glasse, described in the Chapter of the Sheepe.

To redresse the other inconvenience, I must discourse a little more largely of the cause; first it is found by experience, that those Trees which were barren the former yeare, doe not so easily let their fruits fall with frosts, as the other; the reason is, because those Trees got a more solid juice by their barrenesse; for the Sunnes heate, in the former yeare, exhaled and drove out the more flegmaticke juice, and so left the trees better furnished with more firme nutriment for the next yeare; that being the principall component in all things naturall; and being wanting, no fruit prospereth: for as is declared in divers places of the booke; all fruits are compounded of a double substance,

stance, the one terrestriall, and the other aethereall, and for the most part, the want of the terrestriall part causeth ill successe.

Now to helpe this evill, it is found by experience, that when a Tree hath beene blowne downe with the winde, and hath beene lifted up againe, and covered with new earth; that Tree hath beene more fruitfull by much, then ever it was before; the reason is, that while it stood firme without altering the earth, it had sucked all the solid juyce which lay within its reach, and could get no more.

Therefore it is very good sometimes to change the earth about the principall rootes; and if any rootes grow right downward into the barren earth, then to cut them off.

So shall you have fruites in scarce yeares, when others have none; in such a yeare, one bushell of fruites is worth a great number in other yeares, when Nature is so friendly, as to prosper them every where; whether industry be used or not.



CHAP. III.

Wherein is shewed how food, and maintenance for the workmen may be provided, by the industry of the said workmen.

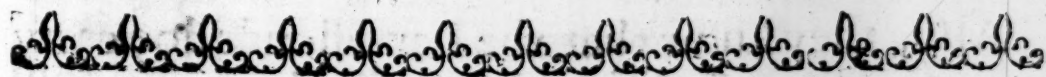


AS for maintenance for the workmen, I see no reason why the Landlords should be remisse in providing the same; in regard that the money laid out upon the improoving of their own lands, will yeeld a farre greater annuall revenew, then twice so much money laid out in the purchasing of new lands. And I see no reason why Tenants at will, Tenants for terme of life, or for a short tearme of yeares, should be industrious, when as the benefit of their labours, is to fall into other mens purses; unlesse there be a Contract betweene the Landlord and Teuant; whereby a just share may redound to both parties answerable to their merit: which if this were done, then would the Husbandmen be much stirred up to trie experiments; and if they should but spend their spare times in these workes, there is no question, but that many fat veines of marle, chalke, limestone, and other earth, would be discovered in many places which now lie hidden, and doe no good at all.

Also, the Common wealth would be furnished with Timbertrees in such manner, that the wealth thereof

thereof would not be so exhausted as it is; and is more like to be in future time, by importation of Timber from other Countries.

Also, it would be furnished with fruit trees, which is a wonderfull commoditie, in time of dearth and scarcitie; for before this last yeare, it hath never happened that Corne and Fruits have both failed in one yeare; but even when Corne was scarce and deare, then fruits were plentiful, which produced Perry and Cider in great plentie; so that the Countrey received great reliefe, not onely for their drinke, but also for their food: and this I can witnesse for the space of threescore and fourteene yeares, partly by mine owne experiences and partly by my book of fiftie yeares observations.



CHAP. V.

Wherein is shewed that the common way in Husbandrie at this time used, will produce in length of time, nothing but povertie, and beggerie.

AS for the Common way and practise in Husbandrie used at this day, all men of good understanding doe know, that it produceth every yeare barrennesse more and more; and in the end, will produce nothing but povertie and beggerie: but

whether the same may be redressed by new Inventions and Improvements, is a thing much doubted, and indeed, the question cannot be determined by any other way, then by experience, which admitteth no imposture: for every Husbandman knoweth, that sheepe being fed upon the Commons, and carried with their full bellies into the Folds upon the arable land, doe impoverish the one ground, to fatten the other; whereby it commeth to passe, that one Acre of land inclosed, is better then foure Acres of the same in Common: whereby it is plaine, that three parts of foure, of all Commons are utterly lost: also the destruction of Timber, and the neglect of the increase thereof; also the neglect of severall other workes plainly declared in this booke.

Also, they know that the Land floods doe carry away the fatnesse from the arable land, and all high grounds, in huge quantitie into the Sea; which is further manifested, by the leaving of some small part thereof in the meadowes, whereby they are enriched: also the further manifestation of this truth is seene by *Nilus* in *Egypt*, the Granarie of the World: where they have no more fertilitie then the water bringeth yearly in his belly in certaine moneths, during its overflowing of the ground; in whose residence left behinde, they use to sow their seed, and have incredible increase; and the greater the overflowing is, the greater is their plentie; which they can discerne by certaine pillars marked with severall marks, which the height of the water touching higher or lower, doth demonstrate

strate afore-hand the quantitie of the ensuing plentie.

Which residence of the water, if it had hapned in a Countrey where it had not beene taken notice of, nor the nutrimentall vertue thereof bin extracted yearely by sowing of Corne, or other things; there is no question but that it would have become a fat veine of marle, able to have fertilized other land: for I could never apprehend any other reason of the veines of marle, but that the water left that fat mussilage in former times: whose fatnesse hath not bin exhausted since by any industrie; and the same reason, I conceive, is the cause, why limestone and chalke doth fatten ground; onely here is the difference, that the limestone and chalke are covered with more common earth, and are placed so, that the subterraneall vapours doe more impregnate them, and indurate them into an hard masse; so that they doe stand in need of fire to unlose their firme compaction, whereby they may yeeld their nutrimentall vertue: and where any of these substances shall be discovered, there they are to be accounted as hidden Treasure found, for that they are farre more worth then any Gold or Silver mine; being not onely infinite, and not to be exhausted by time: but also the profit thereof not to be diminished through the multitude of Sharers; which inconvenience all other Treasures are subject unto; which is the reason that Husbandry is holden the most honest and conscionable life in the world, and the supporter of all the rest; which being compared with it, are
nothing

nothing but toyes and trifles ; neither considerable almost at all, in respect of Husbandry which supporteth the World ; whereby it appeareth , that any new Invention or Improvement in Husbandry is inestimable ; for that so many lives are thereby sustained.



CHAP. VI.

Wherein is shewed that the new inventions and improvements contained in this Booke, will produce maintenance for all, though they shall grow never so numerous; whereby the Frontispice of this Booke is cleared from imposture, in that it proclaimeth the treasure to be infinite.



AS for the remedy for the avoiding of the encrease of barrenesse , and decrease of fertilitie, caused by the accustomed manner of Husbandry now used ; the whole tenour of this Book doth manifestly shew : as by these particulars here under written doth more plainly appeare, wherein I submit my self to the Readers judgement, not onely for the annuall profit which will accrue to the Common-wealth : when the said new inventions and improvemens shall be brought to full per-

perfection; but also in the meane time for the setting of poore people to worke in the most apt places, to receive the benefit of these new inventions; for I know a thousand places in *England*, where an hundred pounds laid out, will bring in an hundred pounds *per annum*, with convenient industry perpetually to the worlds end.

In such places as these I would have my new inventions and improvements put in practise at the first, and afterward according to the old saying, Let him that commeth last, fetch his water the furthest.

The annuall profit of the timber trees after one age, will amount to }

The annuall profit of the fruit trees after halfe an age, will be }

The annuall profit of the wooddy and thornie grounds, being turned into fruitfull fields and pastures, will be }

The annuall profit of the new meadow ground, caused by the watering and fatting thereof by the Persian wheeles, will be }

The annuall profit of the Mossie and Ant-hilly grounds, being made double of value by these new improvements will be }

The annuall profit of the third part of all the arable ground in England, which may be turned into pasture, and hey ground, in regard that the two third parts are sufficient to produce as much corne as all doe now, will be }

The Annuall profits of the Commons enclosed, in regard that every acre then will be as good as foure acres are now, will be worth

The Annuall profit of the Seed saved in setting, more then is spent in sowing, being nine parts in ten, will be worth

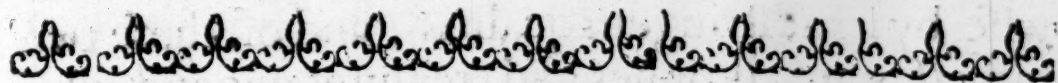
The Annuall profit of the more increase upon every acre by setting then by sowing the Common way, will be worth

The Annuall profit of the Orchards being improved after that the trees shall be transplanted into the hedgerowes will be worth

The Annuall profit of the Seed corne steeped in fat water and candied with Lime, and so set or sowne in grounds so remote from the Farmers houses, that it will not quite the cost to carry manure so farre will be worth

The Annuall profits of the uncertain grounds, and such as through their evill temperament doe often faile being brought to certaintie, and made not subject to faile by mixing them one with another, will be worth

The profit of the corne preserved from blasting and mildewe, and of the Sheep preserved from rotting, will be once in seven yeares worth



CHAP. VII.

Wherein is declared the manner how to make barren land fertile, and that as the people increase, so by their industry their food may increase, even as twenty Hives of Bees being all industrious do live as well, as if there were but one in the same garden.



As for the making of barren Land fertile, I finde that it may be done by as many severall wayes, as medicines are made for the diseases of men and beasts, and that the worke requireth as great judgement: for sometimes the ground is over fat, and will beare nothing, as we may see in many places, where it is so fat that it will burne, and there the cure is to cut up a part thereof into turfes, and when they are dried to set them on fire, and so to strow the ashes amongst the rest, to bring it to a temperament.

For I finde a double fatnesse in every compounded Body, the one combustibile, the other incombustibile: the combustibile fatnesse causeth vegetation by its rarifying and vapping qualitie, when it feeleth the heate of the Sunne; the incombustibile or fixed fatnesse causeth to agulation

of the said vapours by heate of the Sunne likewise by its adstringent qualitie, and of these two fatnesses, are all riches and treasures engendred.

The propertie of the incombustible fatnesse is to sinke in water, and the propertie of the other is to swim upon the Water, and that ground which aboundeth with the combustibile fatnesse is apt for such Seeds and Plants as require a combustibile fatnesse.

And as every compounded Body aboundeth more or lesse with either of these fatnesses; so it sinketh or swimmeth in water the more eagerly: whereby one generall opinion is manifestly found false by experience, which is, that the lightnesse of a thing causeth it to swim, and the heavinesse causeth it to sinke.

And thus I demonstrate it: if you cast the body of a Nut tree which is combustibile into the water, it will swim: but if yon cast in the shells of the Nuts, which are lighter quantitie for quantitie, and lesse combustibile, they will sinke.

And for a more full Demonstration of this position take this experiment following: gold is the most incombustible substance in the world, and therefore sinketh most eagerly: which may thus quickly be tried; let a twentie shillings piece of gold be weighed against his Brasse weight, then let the scales sinke an inch or two into a Bason of water, and you shall finde the Gold heavier in the water by about ten graines: because that the combustibile fatnesse in the Brasse inclineth more to swimming then the Gold, that conteineth almost
none

none of that kinde of fatnesse: by this experiment the truth of my position is proved: besides, that any man may by this knowledge discover a counterfeit peece of Gold almost aswell as a Refiner, if he doe it exquisitely: for if two peeces of Gold both of one weight, the one true, the other false, be thus let sinke into the water, the one will overweigh the other, and the basnesse may be discerned by the number of graines differing, without refining it, or defacing it at all: Also hereby Alchymists may learne, if needs they will be meddling, to lay aside their Balderdash compositions and illiterate operations in things not congruent, but much discordant for their purpose.

But I could wish they would totally leave off the practise for their owne good, unlesse it be such as doe it for their pleasure, for they that ayme onely at profit run a very desperate hazard.

For not one in a thousand of the seekers finde that they seeke: besides that I doe more then three quarters know that the Art is not so lucrous as they doe imagine.

For I know that the Art is true: also I know no infirmitie by my selfe, why I should not improve it to be lucrous aswell as an other, if it were so feasible a worke to be done as is imagined.

Besides, that the late Writers leaving so many Papers behinde them, sheweth plainly, that they had a desire to leave a fame behinde them of their knowledge; but if the Art had been so lucrous as some imagine. I suppose that they would have left some memorable acts behinde them which

would have confirmed the truth of their Papers.

This digression I have made from my matter, to get some inventive braines to spend their studie and labour with me in my new Husbandry, and doe verily assure my selfe that those that refuse my Counsell will repent it.

Now to proceed according to my intended purpose; I will first declare divers experiments which I have seene in the fertilizing of land, and the causes thereof, as fully as I could discover them: wherein I chalenge no immunitie from being sometimes mistaken, no more then others that have written of these hidden and profound matters; and make no question, but that when the light of truth and perfect knowledge, shall abound in the world, that then both they and I, in something shall be found fooles upon record.

Yet as a Physician cannot attaine knowledge to cure all diseases, yet hath not lost all his labour, for that he hath attained skill to cure many; so my glimmering light in these matters, is better then none at all.

I have knowne a load of Pigeons dung fetched sixteene miles, and a load of Coales given for it; which in the soile where it was fetched, would have done more hurt then good, for the manuring of land; yet where it was carried, it did as much good for the fertilizing of land, as double the charges; which might have beene effected as well by a composition of lime and common dung putrified together; the proportion being found by a few

few trialls in small quantitie ; whereby nine parts in ten of the charge might have beene saved.

For there is no difference of dungs, but as the incombustible astringent fatnesse doth overmatch, or is over-matched by the combustibile ; so it is more or lesse apt for a cold, or an hot ground : whereby I conceive, that in the soile where the Pidgeons dung was fetched, the incombustible astringent fatnesse did predominate ; and in the soile where it was carried, the combustibile fatnesse did predominate ; so that in one soile the Pidgeons dung cured the barrennesse, in the other it poysoned the fertilitie.

I have also knowne many hundred loades of earth sold for twelve pence a loade, being digged out of a meadow neare to *Hampton Court*, which were carried three or foure miles to the higher grounds, and fertilized those grounds wonderfully, and recompensed the labour and charges very well ; which earth being laid upon arable land, within a furlong of the same meadow, did more hurt then good ; the reason can be no other, but that the earth digged in the meadow did abound with the incombustible fatnesse, being the residence of the water, whose propertie is to carry in his belly that kinde of fatnesse, and to leave it in such places where the slow motion gave it leave ; whereby it had a propertie to fertilize the higher grounds, abounding with the contrary fatnesse, and to poyson the lower grounds, being overcharged with the same fatnesse before.

I have also known stiffe clay grounds that would
feldome

seldome be fruitfull, unlesse the season of the yeare proved very prosperous, to have bin cured by laying thereupon a great quantitie of light sandie ground ; which afterwards was converted to a good temperament, like to the sort of ground, commonly called, Hasell ground, which seldome or never faileth to be fruitfull.

I have knowne also light sandie ground, which was good for little or nothing, cured by laying thereon a great quantitie of stiffe clay ground, which converted it to good temperament ; where by it became fruitfull, and not subject to faile upon every light occasion as it did before, but would abide varietie of weather according to the nature of Hasell ground.

And this Improvement is of no little value, for there is a great difference betwixt land that is subject to faile once in two or three yeares, and land thus improved that will not faile once in two or three and twenty yeares, through the distemperature of the weather.

And there would be many improvements of this nature put in practise, if there were a law, that every Tenant, if he were put out, should recover double his charges of the succeeding Tenant ; which may also be done by a Contract betweene the Landlord and the Tenant, if all would agree ; and then men would labour cherefully, as for their posteritie, if they were sure that another should not reape where they have sowed.

And if men should but spend their spare time in planting, grafting, and improving their land, which
now

now they loose ; judging it as good to play, as to worke for another ; it would make an excellent mutation in Husbandry in an age or two, and very profitable for the generall good of the posteritie.

For all men have a naturall pronenesse to worke for their posteritie, if they might be secured how they should not be frustrated in their expectation ; and the very bane of Husbandry at this day, is the incertaintie of their tearmes ; as may be seene in *Ireland* at this time ; where having a little more securitie then in former times, they are more industrious, and live better then in former times, when there was not halfe so many in number.

Now to returne to my matter : I have knowne a wonderfull dammage in the North-Countrey, in the pasture grounds, by their growing with mosse, which I have cured sometimes with ashes : and sometimes that cure failed, by reason that the nature of the ground altered ; and then I mixed lime with dung, and putrified it together first, and then laid it upon such barren mossie ground, and cured it.

And a worse dammage then this, I found by Mole-hils, which were increased much in magnitude by Ants commonly called Pismires, which I could never remedy by any other meanes, but by digging them into foure parts, and then paring away the earth, and laying the ground levell with the grasse upwards, then the Ants died, or fled away, being a creature that cannot abide moisture ; therefore they raise their hils high from the moisture,

sture, and thereby dammage their Landlords extremely; afterwards with a great bush of thornes, I harrowed the loose earth even with an Horse; whereby it was much improved, and mainteined almost double the number of cattell which it did before.

I have also knowne certaine Acres of land taken out of a barren Common, which in a few yeares hath become worth foure times so much of the rest that lay in Common: whereby it is manifest, that three parts of foure, of all Commons, are lost for want of Husbandry; and to remedy this losse, there is no meanes but to inclose the said Commons, and then there is no question, but if the Sheepe and Cattle which feede upon them, doe spend their dung upon them, and also be foddered upon them in the Wintertime, that the dung bred by the hey comming out of the meadowes, which are fatted by the land-floods, or by the *Persian* Wheelles; a new Invention profitable to be practised here in *England*: that then they will increase in fertilitie every yeare more and more, untill they be as good as the Pastures, which appeare evidently to have bin taken out of them in former times.

For the Commons are impoverished two wayes by the accustomed ill Husbandry; the first is by driving the Sheepe from them with their full bellies, into the folds upon the arable land, whereby the one ground is impoverished to fatten and enrich the other: the second is by keeping them so bare, by reason that there is no stent of Cattle; so
that

that a great part of the fatnesse doth evaporate by the scorching heate of the Sunne into aire, and so is joyned with the common aire, for want of sufficient receptacles to take that benefit.

For the chiefe skill in Husbandry is but to plant receptacles for the terrestriall vapors which are seeds and plants: which is manifestly seene, for that a thousand plants or trees will grow upon one Farme, as freely as one.

But this worke of inclosure will never take effect, unlesse the said inclosures be laid to the Farmers houses onely; in regard that they onely have had that little profit of them which hitherto hath bin raised.

For none else have reaped any thing from them hitherto; for that the Gentries Cattle are usually greater then those barren grounds will mainteine, and the poore have few Cattle to put upon them.

Now whereas this worke must be done by the consent of all parties interess'd in them; else it is like it will never be done: let us consider how all parties may be gainers by the worke, which will cause consent, or else nothing will cause it: for if it be laid by indifferent proportions to the Farmers houses, then will the Gentrye gaine by the improvements of their rents; and the Clergie by the improvements of their Tithes: both which hitherto have gained little or nothing; and the poore will gaine by their employments in the said improvements, which employments they now want: yet I could wish that in every Parish where Commons are inclosed, a corner might be laid to

the poore mens houses, that every one might keep a Cow, or for the maintenance of his familie, and the rather, for that they are the best servants to the Common-wealth: for how could the fields be reaped, or the corne thrashed, or other works of like nature be done, if these were wanting.

Now it is requisite to shew some invention for the improvement of the hay grounds: which will be much advantage for the fertilizing of the high barren grounds, by foddering the Cattell there in the Winter time. And for this purpose there cannot be a better way then that used in *Persia* and *Spaine*, by water wheelles of thirty or fortie foote high, with wooden bottels which doe fill in the river, and empty themselves above into a trough of wood, and so is carried to those grounds where the Land floods never come to flatten them, and by this meanes the Meadow grounds for Hay may be doubled in many places, not onely in quantitie, but also in qualitie.

For I have knowne in *England*, where Hay ground worth but ten shillings an Acre yearly, hath been improved by meanes of this nature, that it hath borne Hay in such plentie, that it together with the latter crop hath raised ten pounds upon an Acre: but this was in a dry Summer when Hay was very deare and scarce, and therefore is not perpetuall, but yet a sufficient gaine may be alwayes hereby gotten: I know a man not farre from *London*, that by laying out three hundred shillings, improved his Land three hundred pounds *per Annum* by watering it onely, by raising the water with dammes
of

of earth, so that it might at his pleasure over-flow his barren grounds, which profit might still be doubled by this invention of the *Persian* wheelles: whereby the water might be raised so high, that it would overflow the barren grounds higher, and broader then before by the halfe; and this water, if it come from Chalkie, or Limestone grounds, or be coloured with Land-floods, doth fatten the ground wonderfully.

Of these Wheelles there is to be seene in *Persia*, two or three hundred in a River, whereby their grounds are improved extraordinarily; and I see no reason but that good use may be made of them here in *England*.

And though this increase of fodder will be very conducible for the manuring of the high grounds, whereby they may gather fertilitie, by having the Sheepe and Cattle foddered upon them in the Winter time, whereby they shall not onely receive the benefit of the dung bred upon them, but also of this new Meadow-ground; yet my meaning is not totally to take away the use of the Sheep-fold upon the arable land; for in the great Corne Countries where the Sheepe are kept in the fields; there they doe good in keeping the fields bare, although they be folded in the night; and in the other Countries where there is not much Tillage, I would have all men to endeavour to make as much use of my insuing experiments as they can possibly, with convenience; which will raise manure enough in most places, to serve their turne, so that they will not need to use the Sheepe-fold, where-

by one ground is so much impoverished to enrich the other; and where there is no remedy, there they may drive the Sheepe to the fold out of the new inclosures, as well as now out of the Commons in the Summer time: but then the fertility of their new inclosures will increase much more slowly then otherwayes, if the Sheepe and Cattle shall manure them both in Summer and Winter.

I must needs confesse that the dung of Sheepe is a very temperate manure for much Corne ground, and is not so hot as Lime, Pigeons dung, or Poultry dung; nor on the other side, so cold as Cow dung, or Oxe dung, and therefore to supply the place of it, there is required a composition of lime and dung together, which the proportion being found, and being laid interchangeably in leeres in a dunghill, and so let lie a certaine space to putrifie and rot together, will supply the roome of the Sheepes manure most excellently.

Also in places convenient, I would have Ponds made to receive the water of Land-floods, which once a yeare will yeeld great store of good manure, but the best will be where the Land-floods come from fertile fields, and from Townes: but especially from Market Townes whose streets are paved.

Also within the Tide worke, I would have sluices in all your ditches that fence in your grounds, where the water may be let in swiftly, and after it hath settled cleere, then let it out very slowly, and it will leave a fat residue behinde it; for it is certain, that all the fat veines of Marle were left by the water

water in former times, by its flow departure from such places; for it is manifest that all these varieties of earths have bin caused in former times by the various motion of the water, as may be seene by the difference betweene the earths fatnesse in severall places upon the Sea coast; for in *Devonshire* the Sea leaveth a sand sofat, that they carry it many miles ou Horsebacke to manure land withall; and where it is laid, the fertilitie is increased wonderfully: but how these fat veines of Marle came to be laid in their places, is much controverted; some thinke by *Noahs* Flood; others hold, that all Land hath once bin Sea, and will be Sea againe by turnes in length of time; which opinion is not so frivolous as it seemeth at the first shew; for we see that the Sea doth continually get Land in one place, and loose Land in another, and of that earth which the Sea carrieth in his belly, it leaveth the fattest part thereof in such places, where it goeth out with the slowest motion; which may be seene by experience in Rivers; for where the water runneth swiftly, it carrieth with it the whole body of the earth, and as the motion groweth slower, it leaveth it againe: first, the heavie gravell is left; next, the plaine earth is left; and lastly, when it commeth to an exceeding slow motion, or still standing, there it leaveth his fatnesse.

But whether all the Land hath been Sea, I make some question: but it is certaine that a great part thereof hath been Sea: for peeces of Ships and Anchors have bin found in *Germany* two hundred miles

miles from the Sea, being covered with earth by the motion of the water: also divers Shells and other things have been found in *England* farre distant from the Sea: also the Hills and Dales upon the Land, doe shew plainly the worke of the water, even as the Claw of a Bear, or a Lion, doth shew by his print that a Bear or a Lion hath been in such a place.

I have tried to putrifie water by it selfe, and also with helps, and doe finde that it may be done even as milke by helpe of rennet is curded into cheese; a thing that no man would beleeeve, but that experience shewes it to be true; but as yet I have not brought the experiment to full perfection, and therefore as yet I will respit the publishing thereof: some experience hereof may be seene in the Moats and standing Pooles which yeeld great store of good Manure, and I wish that they were more made use of.

For I have seene much over-sight committed by many Husbandmen, in letting out the putrified and coloured water from their Moats and dung-hill Pooles, to the intent that the Manure in the bottome might be the sooner dried in Summer, and fit for carriage to their Land; whereas all the water that was high coloured, might have been improved in such frugall manner by a little industry, that it would have produced such an increase of so much Barley, as would have made as much good drinke for the Husband mans provision, as the coloured water which was lost.

And in this manner I would have it ordered: in
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the heate of Summer when the Sunne hath exhaled a great part of it, and that it groweth thickish and fat; then reserve a good pit full thereof, well bottomed with Clay, that will hold water, and at Seed time steepe your Seed Corne in it, but put the fat water to it, by little and little as it drinketh it up: that at the last it may be almost dry of it selfe: but before it be full dry, sift a small quantitie of Lime amongst it, that so it may grow dry with the Lime, and be like Comfits: then with this Seed Sow or Set your most remote ground from your Dung-hills, and by this meanes, you will save ten times as much labour in carriage of your dung, so farre as this labour cometh too, and as for your crop, though you shall not have so much increase as some have Mountebanklike reported of it, yet you shall have a good materiall increase for one crop onely, and corne thus ordered is not subject to be devoured of fowles when it is new sowne.

The like infusion may be made with Lees of Wine, Ale, Beere, Perry, Sider: also with Beefe-Broth, and the Brine of powdring Tubbs, and all such liquors as conteine any fatnesse, and these liquors are best mixed divers sorts together where they may be had.

And I have sometimes spritted the Corne a little as they use to do for Malt, and then have sowne it, and it came up speedily, and got the predomination of the weedes at first, and so kept the same: whereby I had farre greater increase then ordinary.

Also I found sometimes when a dry season came
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upon the sowing, that my Corne thus ordered took root far better then other mens Corn: who would not take this small paines to steep it and sprit it.

Now for the residue of your coloured fat water, it may be carried in great Tuns as the Salt-peter-men carry their liquors: and therein having divers holes, you may water your arable Land that lyeth next to your houses: also you may get good quantitie of old Thatch or Straw, and spread it on the ground by the Pondside in the heate of Summer, and ever at spare times as you see it dry, water it with a Scoope, but not so much, as that any shall run away, and continue this worke till all the fat water be dried upon it: then lay it on round heapes and let it rot into dust: this dust is little inferiour to Pidgeons dung for the manuring of Land, especially, if you have dried great quantitie of the fat water upon it.

And I would have your Moats and standing Pooles so placed, that all the Urine and fat moisture of your Stables, beast-houses, Kitchens, and other houses of Office may descend unto it.

By these severall meanes aforesaid, you may double your quantitie of manure every yeare, and so consequently the increase of your crops, if good heed be taken that none of your coloured fat water passe away: for there is a wonderfull fatning vertue in that part of the Manure, which is the most apt to dissolve, and to colour the water.

And this fat Musselage being so apt to be carried in the belly of the Water at Land-floods, hath caused the valleys to be so fat and fertile, and the high ground to be so barren,

Yet

Yet we see by manifest experience, that there is a remedy by industry to cure the barrenesse of the high grounds, for if we observe it well, we shall finde that the Farmers dwelling in barren soiles, are generally richer by their industry, then those that dwell in the fatter soiles.

Now for so much as there is so great a difference of the nature of Land, and also there is so great varietie of the weather in these insulary Countreyes; there can be no absolute rule prescribed to hit the bird in the eye, in the composition of Manure for all sorts of grounds and weathers.

Therefore every one is to make use of his owne experience, sometimes in small quantities, whereby many excellent and profitable experiments may be discovered.

And for his better furtherance to hit the marke, I will here set, downe, as plainly as I can, the causes of barrenesse in this kinde, which I finde to be these: when the combustible fatnesse doth much predominate in any earth, as it doth usually in the higher grounds; and the reason is, because that the water is prone to carry the incombustible fatnesse in his belly from the higher grounds, and to leave the same upon the lower and more levell grounds, and therefore that ground requireth Cowe or Oxe dung, which is combustible, to bring it to a good temperament; likewise the higher grounds require Lime, Ashes, Chalk, Pigeonsdung, and Poultry dung, to bring them to a good temperament: for these two fatnesses are of different nature, yet nothing increaseth without them, both

mixed, for it is the nature of the combustible fatnesse to grow soft, to rarifie and turne into a vapour by the heate of the Sunne; and of the incom-bustible fatnesse to harden and coagulate by the heate of the Sunne, and by these two contrary qualities all riches are engendred.

Wherefore as *Actuarius*, the Physician summieth up all his Art in one line in these words: *In omni affectione morbosa contrarius est pugnandum*: So I summe my Art as briefly, viz. that every cure in Husbandry is to be performed by mixing the Land with a composition of Manure, contrary to that which causeth its barrenesse.

And oftentimes this labour may be saved by choosung apt Seeds, and Plants: for some soiles which will not beare one thing at all, yet are very fertile in bearing another.

And this is the reason that the old saying is true, *Non omnis fert omnia tellus*: For where the Seed or Plant requireth a greater part of the one of the fatnesses more then the other, there that Seed or Plant prospereth, where the congruent fatnesse doth predominate, which by its Magnetique vertue it is prone to draw to it; to increase his like according to the great *Magna Charta* or Grand-law of nature: whereas divers other Seeds or Plants, would not prosper at all in such ground.

Whereby it is plaine, that as the various temperament of earths doe require various Seeds and Plants: so they doe require various compositions of Manure, to bring them to a temperament: which compositions can never be found out, but by

by practise and triall of sundry conclusions upon small quantities of Land, at the first, with sundry compositions, as to mixe Lime with dung in severall proportions with 2, 3, 4, 5, 6. or more to one, as occasion shall require, and when the true proportion is found, then to proceed in greater works.

And I hold it good, that no Lime be laid upon the high ground, before it be quenched with some small quantitie of Oxe or Cowe dung: for by this meanes the Land-floods are not so apt to wash it away: for the Lime of it selfe is very apt to turne into Muffilage with water, and so to be carried away.

Now to shew how these inventions and improvements are able to change the former practises in Husbandry, in such manner, that the fertilitie may now perpetually increase, contrary to the former practise, whereby it yearely and houely decreased; I will contract my experiments into a lesser roome, whereby the memory of the Readers shall be lesse charged.

And first it is manifest, that the Hay comming by the fatning and watering of the barren Land adjoyning to the Meadowes, by the *Persian* wheelles, produceth dung to fatten the high barren grounds by foddering the Sheep and cattell therewith in the Winter time: whereby one barren ground is made so fertile that it farneth another.

Also the Muffilage of water now gotten by Land-floods which before was lost and carried into the Sea, doth helpe much for the same purpose.

Also the benefit of Moats and standing Ponds

more then before, whereof great quantitie may be by industry produced, doth much helpe likewise for the said purpose.

Also the new increase of Wood will make better provision of Lime then heretofore, which will be infinitely conducible to the said purpose.

Also the Art of putrifying of Water, not as yet brought to full perfection, the best and most expeditious way will doe much good for the said purpose: for though it be as yet a thing not fully perfected, yet it is not totally in the aire, for I can doe it already, but not in such exquisite manner for expedition in great quantitie, as I meane to do before I publish it.

And for present satisfaction, let all men know that the fatnesse which is loathest to sinke in water, is the most noble fatnesse of all other, and not inferiour to Pigeons dung: for the reason why it is so loath to sinke, is because of its excellent temperament, being compounded of both the contrary fatnesses formerly spoken of; so that the combustible fatnesse in it being joyned with the incombustible, causeth it to be so loath to sinke.

Now if all these new Inventions for the provision of manure shall double the former quantitie, as by indifferent industry it is very possible they may; then will the fertilitie be likewise doubled; and so consequently the same quantitie of land being thus improved, will mainteine double the number of people.

For it is a strange thing to see how little a quantitie

titie of land, will mainteine a family of people, being industriously improved.

Of which experience, none can better beare witnesse then my selfe, whose Predecessors, though generously descended, lived well upon a small Farme; and by their industry, maintained, and educated their children, in manner not much inferior to the sons of the best Knights and Gentlemen in the Countrey.

And it is certaine, that there is sufficient fatnesse of both kindes in every Countrey, to bring all the Land to a good temperament and fertilitie; though it is discretion at the first, in such places where it may be done with the least labour and charges; for though the water carry the fatnesse from the Land into the Sea in never so great quantity, yet the Sea casteth it forth againe in some place or other; whereby it may by industry be recovered in such places, and new mixed by the sound judgement of the Husbandmen.

For though I can scarcely beleeeve that all Land hath bin Sea, viz. the great East and West Countries, yet it appeareth evidently, that the greatest part of those great Countries have bin Sea, and also that these insulary Countries have bin Sea totally.

For it is impossible that the water in the Deluge should in so short a time, make so great an alteration upon the Terrestriall Globe, as is manifest it hath, by these ensuing demonstrations.

First, it appeareth in the West-part of *England*, that though the waters in the Deluge might bring
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that multitude of Firre-trees which are there found in the earth; yet it could not possibly cover them so deepe with earth, in so short a time; it being found by experience, that where the water casteth out earth, and heightneth the earth to get it selfe a Concave; there it doth that worke by litle and litle, in long time.

Secondly, it appeareth in the East-part of *England* in the Fennes, by shels, Anchors, and other things frequently found, that that ground hath bin Sea in former time; and the multitude of earth laid upon those things, could not be done in so short a time.

Thirdly, it appeareth that all *England* hath bin Sea; by the hills, and dales, and unevennesse of the ground: being evidently graven by the water, whose propertie is to weare the ground deepest, in such places where the earth is most loose, as it is in all vallies; and to spare it most, in all rockie and firme grounds, of which sort the Mountaines are.

And this is more manifest by the Rivers which grind themselves a passage into the Sea through the loofest earth, which is cause that they runne so crooked.

And this all Fishers and watermen can tell, for that they finde the water deepest in the loofest earth; and ebbest where it is most compacted and firme: for Mountaines and Vallies at land, are depths and shallowes at Sea.

Which thing considered together with the speciall compasse of the Sea, acquiring his deepenesse by its elevation, more then by graving it selfe an
hollow

hollow concavities to abide in, doth shew that there is no such impossibilitie for the Sea to alter his place according to the motion of the fixed coelestiall Orbs, which some thinke to be chiefly through the slow motion of the fixed starres, and that it will make his revolution upon the earth, in such time as the fixed starres make their revolution in the Heavens; both which motions are so slow, that they are not taken notice of by men of vulgar capacitie; and though this thing be not generally received for truth; yet it accordeth with reason and possibilitie, as well as any opinion hitherto broched.

And the reason of this my relation is to good purpose, for by this meanes men may more easily finde out the fat veines of Marle, and know how to mixe their ground in such sort, that it may be brought to a fertile temperament where the water hath left it in an evill temperament; and for their furtherance, they may make balls of earth, of severall sorts, and burne them in the fire, and by their lightning in their weight in the burning, they may get some light how to mixe them, to bring them to a good temperament.

And I see no reason why Landlords should be remisse in these trialls; for where a Lordship is discovered to have severall earths, the one able to bring the other to a fertile temperament, there the rents will be wonderfully advanced.

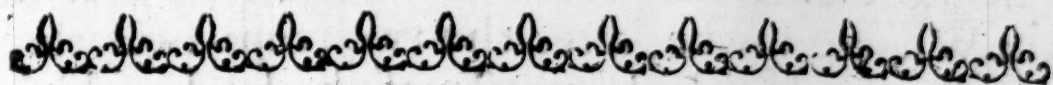
Neither doe I see that men should be remisse in this worke, because that in length of time, all their land thus improved will become Sea: for the mo-

tion is so flow, that all estates are changed before there can be any materiall alteration ; it being found by Mathematicians, that the fixed starres make not their revolutions in lesse time then thirty fixe thousand yeares.

And the reason why the earth is more compact and firme in one place then in another, can be no other then this ; for that the subterraneall vapours doe impregnate it, and tie it together more firmly in one place then in another ; whereof some of them are so strong, as to turne it into rockes of stone ; some able to glue it together like firme earth ; some so weake, that the water is able to dig it, and carry it in its belly, to such places where the flow motion thereof giveth it leave to sinke.

And these are all the reasons that ever I could conceive why the Sea is so various in its deepe-nesse, and also why the Land is so uneven with Mountaines and Vallies ; being so wrought to that unevennesse by the water in former times : and I could wish that men should not thinke their labour over-much in these workes ; for that the riches this way gotten, are more durable then other riches ; for that they are not gotten by the prejudice of others ; which is manifested by diverse examples ; wherein the one is found to continue to many posterities ; the other to rust and grangrene in short time into nothing.

CHAP.



CHAP. VIII.

Wherein is shewed, how to prevent the blasting of Corne, and that the cause thereof doth not come through thunder and lightning, according to the common opinion, but through the deficiencie of the Husbandmens knowledge.

IT is found by a generall practise in the Vale of *Belvoire*, commonly called *Beavor*, where the best, and purest Wheate in *Europe* usually groweth; that if the Farmers sow their Wheate upon the fallowes, then it is usually blasted, by reason of the fatnesse of the ground, which this graine cannot endure; but if they sow it with Barley first, and Peason next, to abate the fertilitie, and overmuch fatnesse thereof; then it is not subject to blasting; by this it appeareth at the first shew, that the fatnesse of the soile is the onely cause of blasting: but upon better consideration, I have found two other causes concurring to produce this effect, whereof neither of them are thunder and lightning, according to the vulgar opinion; for that would blast one eare as well as his next fellow growing so neare it; for what should defend the

one more then the other ; or what should defend the Wheate sowne, after the two crops of Barley and Peason, but the leanneffe of the land ; which the former practitioners this way not considering, spoiled their project, by over-fatning the ground ; thinking thereby to regaine in the greatnesse of the increase, the great charge and labour, which they were at in setting it the rude way with a board with holes in it.

And as for the other two causes of their failing, they were these : First, in a moist yeare the immoderate raines joyned with the fatnesse, and glutted the rootes overmuch with fatnesse and moisture together, which this graine will not suffer : Secondly, when the ground was not over-fat, yet the great raines carried downe the fatnesse, into the lower places of the land, and so blasted that Wheate which grew there, letting the other escape unblasted, that grew upon the ridges, and on the top of the little furrowes ; where the wet and fatnesse descended from them speedily, and did not overcharge them with fatnesse and moisture together.

I have pulled up a thousand eares, both blasted, and unblasted ; and have searched into the causes, as farre as my capacitie would extend, and can finde no other cause but these.

And it is certaine, that neither of these causes alone doth produce this effect, but both joyned together, viz. too much fatnesse and moisture, both at once : for the practitioners of this worke, in some dry and hot yeares, had extraordinary great increase,

increase, which animated them to follow it so fiercely divers yeares; there being no question, but that else one yeares practise would have satisfied them; for they knew the great charge and labour in one yeare, as well as in many, and had increase when the drinesse of the yeare served to recompence all, or else they would have instantly ceased.

And it is as certaine, that moisture without too much fatnesse doth not produce this effect; for then it would doe it upon Wheate sowne the third Crop, as well as upon the first; which sometimes, in immoderate rainy yeares it doth upon some eares growing in the hollower places of the land, in the third Croppe; the reason is, as I said before, because the raine carrieth thither the fatnesse of the higher ridges, and so overchargeth it in those places with fatnesse and moisture together; for Wheate and Hops are both of a nature, they will not prosper but in moist ground; yet they are easily overcharged with moisture: therefore as Hops must be hilled, that they may draw moisture at pleasure, and not have it forced upon them; so must Wheate, or else the Husbandman will be often frustrated of his expected increase; which our former setters of Wheate, not knowing, or at least, not observing, had their Croppe so often blasted, that at length their project was blasted for want of judgement, and experience.

Also their tedious manner of going to worke, by digging their ground, and setting the Wheate with such a number of workemen, for want of in-

vention, did make the losse more intolerable; for they hoped for a wonderfull increase, which some drie yeares they observed; but in moist yeares, their Corne was much more blasted, then that sowne the common way upon leane ground; whereby we see how easily a good cause may be spoiled.

Now to remedy all these inconveniences, there is no way but my two new Inventions, or Engines; the first remedieth the great charge and labour of workemen; for by this invention, two men, or boyes, may set an Acre upon a day; whereas before, fourtie persons were little enough to doe it; and doth excell the old way in expedition, even as the Science of Printing doth excell writing.

And the other Engine doth afterwards lay the Land in little furrowes or ridges, just upon the top of the rowes of Corne: so that all the other inconveniences are remedied: for then neither Surplusage of moisture annoyeth it, nor frost in Winter killeth it, lying at such a convenient deepnesse.

And this way the Land will abide to be made flatter then before, that it may produce a farre greater increase.

Also the Land need not to be digged this way, as they used to doe before: but onely ploughed, and harrowed, and then the Wheat set.

And you shall finde that the Wheat which will Sow one acre the Common way, will set ten acres this way, and notwithstanding you shall have a farre greater crop.

And as for your Seed, you may if you please
picke

picke it out of the middle of the eare for your triall in small quantities, but when you deale in great quantities, you may hang a cloth over a beame in a long roome, so that the neather end lye upon the ground, and then with a shovell a great way off, you may cast it over the beame in such manner, that a fourth part thereof, or as neere as you can, may flye over the beame, and so be parted by the cloth, and you shall finde that fourth part larger and greater Corn then the other a great deale, which will serve for your Seed.

And in this manner may be fet all manner of Corne whatsoever, and with the like utilitie.

But for Rie, (yet Rie will double the labour, if it be furrowed), Barley and other graine, you need not to make it into little furrowes and ridges, as you are to doe the Wheat, they being not so subject to blasting, but the Wheat being to be fet in moist Clay ground must be so ordered, to prevent the inconveniences aforesaid, and where the ground is very moist, there the little furrowes and ridges must be contrary to the common way: for they must be made from the ridge of the Land, to the furrow of the Land, that so the moisture may discend without drowning the corne, and in this manner you shall have almost as good Corne to the furrowes, as at the ridges which is seldome seene the common way; but many times the halfe Land is wholly killed with being overcharged with moisture, and it hapneth well the common way, if upon due triall there be halfe so much Corne upon that halfe of the Land towards the furrow, as there
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is of the other halfe towards the ridges.

And for more full fatisfaction of this worke, I would have every one to try a few perches of ground, first, a yeare, two or three, which he may doe for so little quantitie, with a board with holes, five or sixe inches, distant the old way, and then he may with a Spade for so little ground make it into little ridges and furrowes, and if he finde no inconvenience but the charge of many workmen, he may provide the Engines afterward, which will cure that inconvenience.

And I would have no man to lay an aspersi^on upon this worke, or any of the other, before it be duly tried, whether it be a profitable invention or no: for if it be much availeable for the generall profit, then it is supported by many excellent examples in former time; for as I said in the beginning, as the people grew more and more numerous, so they were more and more put to their shifts for inventions to get their livings: for when they were but few, they found maintenance out of Fish, Fowle, Venison, and other things afforded freely by nature: but afterwards they were glad to take Spades, and to digge, and from that to the plough, that chiefest of all Engines, and the manner of working they were glad to alter: for when Land came to be scarce for the maintenance of the inhabitants, they found the use of fallowing and manuring: whereby the Land got more fertilitie in one yeares rest, then by the former way in many yeares, when they used to let it lye to grasse for many yeares to gather heart of it selfe: by this invention

vention a Countrey would maintaine double the number of people more then before, being onely thus helped by industry. Of these works *Salomon* meaneth where speaking of the Husbandmans knowledge, he saith that his God hath taught him: the *Ancients* used to deifie their Inventors as *Bacchus*, *Ceres*, &c. and the wisest of all that had more understanding then to thinke them to be gods, yet thought they were men in high favour with the gods: for that they saw their inventions prospered, and tooke such admirable effect for the generall good of the universe.

And I would have no man to spurne against these improvements, being so manifestly conducing to the generall good of all persons and Common-wealthes: for if they doe, they will be found upon due triall by the judgement of the most understanding men in these affaires in the whole Kingdome, with whom I have conferred, to be contenders against the common profit, and wellfare of the Land.

And it is not intended that this worke of setting of Corne, should be generally put in practise at the first: but in every place a little in the most convenient and apt places, that so the people may be well skilled in it, and fit to follow it more earnestly in time of dearth and scarcitie, wherein so much Corne may be saved for present releefe and necessitie, that it will be as good as a generall Storehouse for the whole Kingdome, for by this invention, we doe as it were borrow of nature a multi-

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tude of quarters of Corne for present maintenance and foode till the ensuing Haruest.

Because that the gaine in deare yeares of Corne is so infinite in this worke; for the last yeare there might have beene saved fifteene shillings, besides all charges, in every Acre of Barley, in the price of the Seede; and also the Croppe would have beene better by the least as much more. I will here make a description of the Engine, which else would puzzle the best Engineries in the World; for if it be set at convenient depth and distance, then there groweth no weeds at all, as I have found by good experience; for if the earth be equally charged with profitable feedes, then it produceth no weeds; else it will spend it selfe into weeds, or something; for I have found double increase when I have set it foure inches distant, and about two inches, or two inches and an halfe deepe, more then when I set it deeper or thinner: therefore in regard that every good and expert Enginere may make the rest of the Engines in this Booke, by the light therein given, I will trouble my selfe no more, but to let them teach the rest; and so proceed to describe this, that it may not be lost in future time.

And thus I beginne my description; let there be two boardes of equall breadth, boared with wide holes at foure inches distance, and be set in a frame two foote high, the one from the other.

Then let there be a funnell for every hole, made of thinne boardes about two inches square.

Then for the top, let there be two thinne boards
of

of equall breadth, boarded likewise; whereof the uppermost is to be boarded with an hot iron, with holes longer the one way then the other; and is to be of such a thickeesse, that but one Corne onely can lie in the hole.

The other board is be boarded with wide holes, and to be loose, that while the Engine is charged, the whole part may be under the holes of the uppermost board; and when the holes in the earth are made by the neather workes, then to be moved so, that all the Cornes may drop downe.

And for charging, a little Corne being swept up and downe by a broome, or a brush, will fill the holes; and if any misse, the workeman may put in here and there an odde Corne with his fingers, and then moving the second board till the holes be answerable, all the Cornes will droppe downe at an instant.

Then let a large ledge be set about the toppe of the Engine, to keepe the Corne from spilling, and so is the upper part thereof made.

As for the nether worke, it is somewhat more chargeable and intricate; for there must be for every hole, a little socket of brasfe, cast with a verge to naile unto the neather board about the hole, which must be turned, and boarded, all of one wide-nesse to an haires breadth, and must be wide above, and strait below, like a faucet.

Then there must be iron pinnes of five inches long, of great thicke iron wier, drawne so fit, that no earth can come into the brasfe sockets.

Now to make these play up and downe at pleasure,

sure, is the greatest skill in the whole worke; and there is no other way, but that which is here described.

There must be for every wooden funnell a peece of iron forged flat, with an hole in the middle, edgwise; which through two slits in the neather part, must play up and down; through which a brasfe naile must be fastened, cast with an head, contrary to other nailes, bowing downewards, to which the iron pinnes must be fastened with wiers, and so thrust downe, and plucked up at pleasure.

And then every end of the flat pieces of iron, must be fastened into a piece of wood, of such thicknesse, that two thereof may fill up the distance betweene the rows of the wooden funnels.

These may be made to play up and downe like Virginal Iackes; and when they are lifted up, then the brasfe funnels being wider above then below, giveth leave for the Corne to fall into the holes, all an an instant.

These Iackes must be fastened together, the two first on either side of the wodden funnels; then so many together as the weight of the workemen is able to thrust downe to make the holes.

And there must be a stay to hold up the Iackes at pleasure, when they are lifted up againe to such an altitude, as that the cornes may descend by them into the holes.

And the bottome of the iron pins must be flat, and by that meanes they will not be so apt to draw up earth into the funnels; also the rootes of the
Corne

Corne will spread better, and bring a greater increase, if the ground be saddened a little in the bottome of every hole.

And the toppes of the iron pinnes must likewise be flatte, and hang a little loose in the wiers; else if any of the brasse sockets get a little wrench, they will not be drawne thorow, because the holes must be straite.

Though the making of this Engine be somewhat chargeable and troublesome, yet if skilfull men first breake the ice, then it will be common, and the most profitable Invention that ever was found out.

And the toppe of the Engine must be ledged about with large ledges, to keep the Corn from spilling; so will a quart or two of Corne serve a good while, and must be renewed upon occasion.

And the neather halfe part of every woodden funnell, must be loose on one side, to take off and on at pleasure; to amend that which is amisse, upon every occasion.

Also if the slittes in the funnels be lined with iron, the worke will be more durable.

But lest that the charge of this Engine, together with the difficultie of getting it, may be a hinderance to the worke intended; I will adde a description of a more easie way for the poorer sort, which is subject to the capacitie of every ordinary workeman, and is made of wood onely; without either brasse or iron: but herein I will tell no wonders tales, but the worst as well as the best; for these

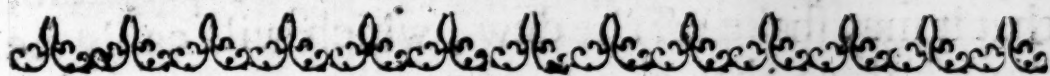
Engines will not endure like the other; besides that, there must be foure workemen, because that the Engine must be made of two parts; the one to goe before and make the holes, the other to come after, and to drop in the Corne; this last must not differ a whit from the upper part of the former; onely it must have foure feete like toppes, in the foure corners, which must be set right in the holes, which are made by the other part which goeth before; which likewise must have foure such feete, to leave an impression when it is remooved forward, whereby the second may be rightly placed, so that the Cornes may fall right into every hole.

That part which must make the holes, is to be made of two boards of equall breadth to the other, and must be boarded full of holes, of equall distance likewise; the wooden pins must be greater then those of iron; because the holes will need to be somewhat large and wide; and they must be fast in the upper board, and loose in the neather board.

And if the Engine be large, as this way it may be larger then the other; by reason that it is easilier lifted and removed, being in two parts; then the upper part must be slit, and divided into so many parts, that the weight of the workemen by treading upon them, may presse them downe to make the holes.

And though this way will require foure workemen, yet the charge will not be double, nor much more then the former way; by reason that the
workemen

workemen may goe forward with more expediti-
on; and may set a broader compasse of ground
at one time.



CHAP. IX.

*Wherein is manifestly shewed the cause of
the mildew, with the preventions and
cures.*

AS for the Mildew, it is a thing quite con-
trary to Blasting, and is thus caused:
When the flowers, and blossomes are
in their pride, and fulnesse, the Sunne
by his heate, exhalet some part of
their sweetnesse, and converteth the same into
Common Aire; which in the night is condensed,
and falleth into dew upon such things as have most
vertue attractive to draw it unto them: Of which
sort are chiefly the leaves of the Oake tree, next
to that are Hops, next to that is Corne; this dew
being unctuous and clammy, is apt to coagulate
and harden by the heate of the Sunne upon the
Corne the next day; and if it happen often to fall
upon divers dayes together, and no raine come to
wash it off, then it getteth power to suffocate, and
strangle the vegetative vertue of the Corne; and
so it withereth by the heate of the Sunne, whose
heate before caused it to vegetate and multiply:

as

as for the remedy it is thus to be cured; let two men in the morning before the rising of the Sunne, goe up and downe the furrowes of the Corne, and holding a cord stretched betwixt them, carry it so, that it may shake off the dew, which will easily be done before that the Sunnes heate hath exhaled the thinnest part thereof, and caused the thicker part to be clammie and glutenous: and for better information of the time of this accident, let men observe when the Hive Bees goe abroad more early then ordinary, and let there be watchmen for this purpose; and to the end that all things might be conducive to the generall profit; I will spend a few lines in the commendation of this creature of God, the Bee; who getteth her riches totally, out of nothing bnt what else would be lost; for whatsoever she getteth, is that which the flowers by their attractive vertue draw to them in the night, out of the dew that falleth; and if the Bees should not by their industrie, in the day time, fetch it away, the said flowers would not draw the same the next night, and so the foode of honey would be lost; for all foode is nothing but Aire congealed, which is manifest in the precedent, and ensuing discourses: therefore seeing that these creatures are such an excellent instrument to congeale Aire, I wish they were more made use of; for what were it for every one to have Bees, they aske nothing but an house rent-free to dwell in, and when they die, they bequeath their riches to their landlords: I have knowne many experiments tried to save their lives, by driving them, feeding them, sleeping

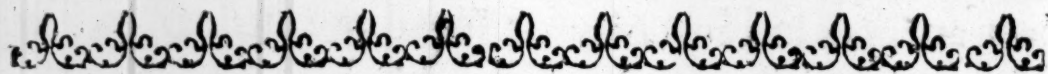
sleeping them, that they should not eate that in Winter, which they got in the Summer, but all was vaine; for what was gotten in the East, was lost in the West, and when all wayes were tried, the old wayes were found to be the best, and surest: I must confesse, I have seene Bees driven into a new hive in the plaine Countrey, and so carried into the Forrest, wherein the flowers and blossomes flourished later then in the plaine Countrey, and by that meanes they got maintenance for the Winter following, but this was in a yeare when the weather was faire and prosperous all the while, during the flourishing of the flowers and blossomes in both Countries; which is a thing very seldome seene, and therefore I will advise no man to the practice, being so fickle and dangerous; for I love not to Tantalize men with vaine hopes, for *Tantalus* his Apples never filled the belly, nor the purse; which was cause that I advise men so much to industry, as the surest way for their profit, and wish that they may not be Tantalized by others, which tell them faire tales sorting with their humours; thereby gaining opportunitie to make use of the most dispositions, which are apt to give credence upon slight grounds, if the tale told be such as they desire to be true, though it be impossible; according to the old Proverbe, *Quod volumus omnes facile credimus*: which is cause that so many are deceived in the world: for their constitution ruleth their passion almost generally, and their passion likewise overruleth their reason, so that he that looketh into the businesse perspicuously, thinketh

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the

the world to be mad or foolish ; and the world thinketh the same by him, as it was by *Democritus*, who through his contrarietie in conceit, to the vulgar multitude was deemed mad, though he had more wit then all the rest ; whereby it appeares, that strong conceit, rather then solid understanding, beareth the greatest sway in the world ; and there is another reason why I would have every one to have Bees, and that is, that they might be their Schoole Masters, as well as their watchmen, to forewarne them of the mildew : for their industrious heed in this worke, that no opportunitie escape them to worke, while the time serveth for the generall welfare of their Common-wealth, declareth the admirable discipline of the great law of Nature, which they obey, and will by no meanes breake for any conceits, or private quarrells : and let me not forget to spend a little Inke and Paper about Hops. I have knowne a thousand pound dammage in one Hoppe Garden in a weeke, or a fortnights time, by this Mildew : I have shaken some poles in the morning, and have found that it did good, by the difference betwixt those, and the others ; but I have not brought the experiment to full perfection, for want of oportunitie : I thought to have watered the Hops with such spouts as are used in *London*, when houses are on fire, by sprouting up the water very high, that it might fall like raine, and performe the effect thereof ; and let no man overvalue the charge, for one thousand pounds worth of Hops being preserved thus, when others neglect, the worke will be worth neere ten thousand

thousand pound: such a yeare, when the greatest part are spoiled by this misfortune; which is manifest by the difference of the prizes at Sturbridge Faire, and other places; being one yeare at twentie, or thirtie shillings a hundred, and the next yeare at ten pound a hundred: If any one will try this experiment fully, that hath better oportunitie then I have, and then publish it for the generall good, he shall be my brother; for that we are both of a Trade, or profession, which shall be called Knowledge-mongers, differing from Fishmongers, Iron-mongers, &c. in that we pay so deare for our wares, and give them away for nothing, which is the cause why we thrive no better of our Trades; but let us not be disheartned, for we will lay our heads together, to bring our Trade into request, by laying open the benefit of our Inventions, and by discovering the vanitie of other devices, where one mans gaine cometh by anothers losse; so will the Major part come to us, through their good dispositions, and love to vertue, honesty, and goodnesse, and so the rest must come to us by force, or else want and povertie will expell them out of the Schoole of Husbandry; and we will comfort our selves in the meane time, with the incomparable joy of a good conscience, and feare no disaster in our enterprise, assuring our selves, that God is on our sides, and so conclude with the saying, *Si Deus nobiscum quis contra nos?*



CHAP. X.

Wherein is manifestly shewed the cause of the rotting of Sheepe, with the prevention and cure.



AS for the rotting of Sheepe, a thing which hath undone many an honest simple man, for want of knowledge to prevent it ; I will proceed according to my wonted manner, to investigate the cause, thereby gaining facilitie, to acquire the remedie ; and for that the losse of the goods is not all, but that there is as great a losse in the fertilitie of the Corne ground which should be manured by these cattle ; I will use the more diligence.

It is certaine, that Sheepe, of all other Cattle, are of cold and moist constitution, which is evident, in regard they can live without drinking of water ; though when they see it, they will sometimes drinke ; yet is it then but a fancie, in regard it is well knowne they can live well without it, and prosper as well as with it : this sheweth that their livers are cold and moist of their owne nature, and cannot abide surplusage of moisture like other cattle ; and therefore in a moist Summer they are troubled with this disease in the same ground, where

where in a dry yeare, they are not thereunto subject; the reason is, that in certaine grounds, the qualitie of the grasse is changed with much moisture, and aboundeth with the laxative, or rarifying sort of fatnesse, which is subject to dissolve their livers, being the fountaine of liquor which should moisten their bodies with good juice; and through this dissolution nature is not able to make due separation of the nutrimentall part, but suffereth it to goe to the parts desiring nourishment unseparated, whereby their bodies are repleat with noxious and waterish humours; thereby causing death and destruction to the bodies thus distempered; as for the cure, it is difficult, unlesse it be done betime, before the dissolution of the liver be too far out of frame: the best way for their cure, is to remove them to the salt Marshes, or to the dry Forrest, whose nutriment is astringent, and fastning, by reason of the incombustible and binding fatnesse there predominating; but because this remedy is not every where to be had, let us thinke of some universall remedy, of which sort I know none, but vigilant providence, in due time to prevent it; and where I have had an intent to water Hay with salt water, so long as the saltnesse would not cause them to forbear to eate it; yet in regard I have not had oportunitie to trie the experiment fully, I will onely commend it as a probable, but not an approved medicine.

But to proceede to the preventions of this disease, the best part of Physicke; let every Harvest, a certaine quantitie of the best Hay be laid apart for

this cattle; you shall know which is best for this purpose, by the constitution of it; for that which is hard, and of a drie nature is best, and that which is of a silkish softnesse is worse; for the first strengthneth the liver, and the other looseth, and dissolveth it; and the more their livers are strengthened in the Wintertime, by foddering them with the most astringent fodder, the better they will beare out a wet Summer; which is evident to be seene in a whole flocke, wherein some of the Sheepe having a more hot and drie liver, doe escape through their strong constitution, differing as men doe one from another in nature: but that this prevention may not seeme frivolous, let us Philosophize a little, about the nutriment, and the thing nourished; which nutriment, though it be not able to change the forme of the thing nourished, yet it is able to change its constitution; as may be seene by Birds feeding on Juniper berries, whose flesh tasteth plainely of the nutriment: also Bees in the Forrest yeeld a sort of Honey, farre different from that in the plaine Countrey: and to make it more plaine, Sheepe that feede upon such grounds as yeeld silkish soft grasse, are sooner rotted, then those that feede upon a drier, and a hard grasse, whose nature is astringent, and not apt to dissolve their livers like the other: therefore for a second remedy, I would have all such hurtfull ground inclosed, and kept for other cattle; and in the meane time, let the Sheepe be kept from it in moist weather, and fed upon grounds which yeeld a more firme nourishment; so shall they be preserved,

ved, and yeeld both food and clothing for men, which are the substance of all riches; in comparison whereof, all the rest are but complements, and trifles; for they yeeld a double nourishment; one way by their flesh, another way by their manuring of land, thereby causing the increase of Corne, the staffe of life.

Whereby it appeareth of how great consequence good Husbandry is in a Common-wealth, viz. the very legges and pillars thereof, without which it cannot stand, nor by any other device, or policie whatsoever.

And therefore I would wish every well-willer to the publike weale, to be diligent in the furtherance of it; and to reade Master *Markham*, Master *Googe*, Master *Tusser*, Sir *Hugh Platt*, and others, who have manifested their good will, by publishing their knowledge in this behalfe.

And I desire every one not to thinke much of his labour, to try experiments of this nature, whose effect, if they prove good, are beneficiall to all, present, and future; and not to be slacke, nor hard hearted, to publish the same; for that they are thereby recorded to be well-willers to that which every man is bound to by the great Law of Nature.

And if any man be negligent in this dutie, he doth manifest his unworthinesse to all posteritie; shewing plainly that he doth preferre his private gaine before the generall; which is a thing odious to all men of understanding.

And admit he be accounted a conceited fellow,

low, or one that runneth not the common way ; yet in regard the common way leadeth to perdition, let him not desist for frivolous aspersions : for when light and truth shall appeare in the World, his worth shall shine, and not be eclipsed by the tongues of conceited fooles, and coxcombes, whose disputations and reasons seeme to be concluded, when the tune thereof fitteth the fancies of the hearers ; then they desire no other dance to be plaide upon those tinckling instruments, but had rather heare the same plaide over and over ; a thing tedious to wisemen, though it were never so true ; for Nature delighteth in vanities, and when truth shall appeare, and shine in the world, then these bables will be found as they are ; nothing but the tinckling of the Aire, an element soft and pliable ; and such a thing which men can bowe, and bend to their purpose, like waxe at the fire, and make good every thing they say at pleasure, be it so or not.

But then by their favours, they must have shallow brained Judges of their argumentations, and conclusions ; who are like themselves, deluded with their owne fancies, and have their reasons obscured by their passions ; and these differ from madmen no otherwayes, but as the greater differeth from the lesser thing of the same kinde ; for though in mad men, it is a privation of reason, and in fooles an obscuration, yet folly preceded, and caused the other ; for though perhaps, some have had injuries enough to make them mad, yet it was their follies, that they did not rather suffer it
with

with patience, then suffer their hearts to breake so untemperately with discontent ; and so long, till the vapours thereof had lifted up so much melancholly to the braine, that it was therewith overwhelmed ; and the curious Organs thereof, so obstructed, and stopped, that it was afterward uncurable : Of which things, I wish every one to take heede betime ; for when the Steede is stolne, it is too late to make fast the stable doore.

I deny not but that in other yeares, and by much moisture falling in other moneths, some few Sheepe of the most waterish, and flegmaticke constitution, may be caught with this disease ; but this is not of that materiall consequence which I aime at ; my meaning being to prevent the grand inconveniences, caused by ignorance ; as for those which are more triviall, I desire that every one may in-deavour to prevent or cure, by his owne industrie ; by adding somewhat of his owne for the full accomplishing of the worke intended : and for his furtherance, I will here set downe the erronious opinions of many Husbandmen in this matter : some are of opinion, that much rainie weather in clipping time doth cause this effect, which is manifestly false ; for that the same cause is in the salt marshes and barren forrests, where the rot never commeth, as is in the plaine and fertile fields ; I denie not, but that the externall coldnesse, and moisture, when the Sheepe are new shorne, may be somewhat coadjuting to produce this mischievous effect ; but yet not the sole cause, which I desire may be prevented, by taking time to sheare

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Sheepe

Sheepe in faire and pleasant weather, and to house them a day or two, upon urgent occasion of sudden, and great raine: If any one object, that no man knoweth how to choose this time, I answer him, that he may foresee it by weather-glasses for that purpose; which I could demonstrate, but that I delight not to plod on in common paths; but will rather referre him to Master Bates his Booke lately written, and intituled, *The Mysteries of Nature and Art*; wherein he may see the worke made manifest; and that sufficient warning is given of all mutations of weather, by an infallible Prognosticative experiment: I have seene many of these glasses ready made fit, and sold in the Glasse-shops in *London*; together with a printed paper shewing the use thereof; which will be profitable for the Countreymen for divers other occasions as well as this; and every active handed man may make them the plainest way for twelve pence charge, which will serve as well as the best: others are of opinion, that Honey-dewes cause this effect; but this is false also; for there are more honey-dewes in sound yeares for Sheepe, then in rotten yeares; and this is manifest, that in yeares when Sheepe are most subject to this disease, the Bees are likewise most subject to die in the Winer time with famine; which may be discerned by the lightnesse of their Hives in *July*; but this is not a generall rule for Hives in all Countries; for some yeares, when the Hives in the plaine Countrey are light, and not well furnished for maintenance in the Winter time; the same yeare Forrest Hives are rich and heavie;

heavie ; and the cause is, for that the weather was faire and pleasant in the latter part of Summer, when the barren Forrests flourished ; and foule, and rainie in the former part of Summer, when the plaine Countrey did flourish : and this is generally observed by my selfe, and my Predecessour, for the space of threescore and fourteene yeares, that alwayes when the Hives of Bees were light, and not well provided for Winter, in the fertile Vallies the same yeare, the Sheepe died of the fot extreame-ly : which upon my first taking notice of, I thought that both these diseases proceeded from one and the same cause ; but upon further investigation, it proved to be true in part, but not in the totall ; for the multitude of raine in *May* and *June*, caused both these effects : but yet in the Bees it caused their ruine, by frequent washing of the honey-dewes, and also by hindring them from working in their best season ; and in the Sheepe, by producing frimme and frothie grasse, abounding with moisture, which these cattle can not beare ; for if the grasse be never so firme, yet sheepe, though they never drinke, their bodies will yeeld Urine, contrarie to other Cattle ; who if their meate be moist, drinke so much lesse water, and thereby save their livers from dissolution, and putrifaction : some have thought that the kells like cobwebs, have done this effect ; but that is false likewise ; for that they are as plentiful in the salt Marshes, and barren places, as in the fertile grounds : some have thought that a certaine kinde of thicke-leaved grasse, like almost to Purslaine, hath done the mis-

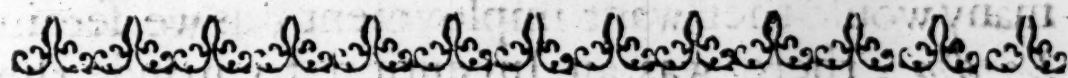
chiefe, but this is also false; for that the rot cometh where there is none of it: some have thought that the Land-floods caused it, these have some hint of the truth, but not fully; for it is found by experience, that where the earth is fattened with Land-floods in the neather part of the fertile fields, there the sheepe are most subject to this disease; but the reason is, that there the grasse is most summe and frothie, and most abounding with moisture in moist Summers; therefore let them be withdrawne to the higher places of the fields, in such yeares onely, when the moneths of *May* and *June*, prove very moist and rainie, and the field is noone: these things being duely observed, will produce more generall benefit, then many greater studies; and seeing that Husbandrie did not onely build, but also maintaine all Schooles; I could wish that it was better fortified, being the very foundation of a prosperous Common-wealth; and if every one would equalize my benevolence, who have reaped double benefit out of the Schooles: we will erect a Colledge for Inventions in Husbandrie, in retribution of their former supplies to Learning; and so conclude, that *quid pro quo* is lawfull payment: this is one of the richest experiments in this Booke, and dependeth upon skill, more then upon corporall labour; and therefore I desire that it may be thankfully accepted, and made use of; being a thing that no man could fully ever discover before my selfe; nor my selfe neither, but that I had helpe by the experience of my Predecessour.

And

And to the end that men may with the most ease prevent this great losse in their flockes of sheepe by rotting, let it please them to understand, that during my owne 24. yeeres observations, and for any thing that I can finde in my Book of 50. yeeres observations, there was never any materiall losse by this misfortune, nor any rot of sheepe worthy to be taken notice of, but in such years when the months of *May* and *June*, and especially *June* proved to bee extreame moist and rainie weather: for I have observed that in some yeeres *July*, *August* and *September* have been so immoderate moist and rainie, that no hay nor Corne could be well gotten, but halfe spoiled with the foule weather, and yet notwithstanding all this, there was no rot of sheepe that yeere: the like I have knowne in *March* and *April*, and yet no rot at all that yeere: whereby it appeareth, that in the said months of *May* and *June* immoderate raine doth produce that frim and frothy grasse, which by its laxative and rarifying quality doth dissolve and weaken the livers of the sheepe more or lesse according to the strength or weaknesse of their livers before caused by nature, or by art helping nature: and also according to the greater or lesser quantity of raine and moisture in the said months: and this accident commeth to passe usually in low grounds, and such as abound with the astringent fatnesse, which in dry yeeres are as sound as any other grounds: yet when they are so plentifully watered with much raine in the spring part of summer, the grasse shooteth up so hastily,

that the dissolving and rarifying fatnesse doth pre-
 dominate in its composition : and changeth its na-
 ture so wonderfully, that it is able to worke this
 mischievous effect : for it is cleere, that in winter
 when the grasse groweth either slowly or not at all,
 there is none of these accidents, be the weather
 never so moist & rainy, neither in low fat grounds,
 nor in high barren grounds, neither in the latter
 part of summer, nor yet in the very beginning of
 the spring time, but only in the pride of the spring,
viz. in *May* and *June*, and most especially in *June* :
 Wherefore let every one trouble himselfe no fur-
 ther, but to fodder his sheepe in winter, with the
 most astringent fodder, according to my former
 directions : and withall to withdraw them from
 the firm and fat low grounds, to the more barren
 and dry grounds in the said months of *May* and
June, and especially in *June*, in such yeeres onely
 when those months are extreme moist and rainie ;
 and I will hazzard my reputation upon it, (which
 I value more than all the sheepe both rotten and
 found in *England*, and never, as yet, forfeited the
 same in any affaires of this nature) that he shall ne-
 ver stand in need to lay the key under his doore,
 and bid good night to his Land-lord, through any
 prejudice which shall come to him through this
 misfortune.

CHAP.



CHAP. XI.

Wherein is shewed, that in these Ages, Inventions to save the number of mens workes, are not profitable to a Common-wealth overcharged with people, but rather the contrary.

AS for the new Inventions, for the saving of mens worke in an over-peopled Common-wealth, it is disputable whether they be for the generall good or not; yet in regard that the chiefe policie consisteth in finding out wayes, how the same quantitie of land may maintaine more people then it did before, which cannot be done any way, but by industrie of the people; therefore I conceive, that in the new Inventions, it is for the generall good to save mens workes by Engines; for if one workeman can doe as much with his Engine, as ten men can doe without it, there is nine mens maintenance saved to the Common-wealth; whereby plenty is increased to every one: I must needs confesse, that if the common practice in Husbandry now used, was to set their Corne the common way, that then the Engine newly invented for that purpose

pose, might doe more hurt then good; for that so many would then want employment; as we see in *London*; there was an Invention to grinde the Needles many at once, whereby halfe the Needle-makers had gone a begging, if the new device had not bin restrained; but in this case it is farre other-ways, for here is employment for many more people then before; though there be many mens workes saved, which would be lost working the rude way: also here is a great improvement in the quantitie of land; for by this meanes the new people set on worke doe get maintenance for many more then themselves, by their industry upon the same quantitie of land which would maintaine but a few before. And it is to be conceived, that when these Inventions and Improvements shall be thoroughly put in practise, then the Commonwealth will not be overpeopled; but rather there will want people to accomplish the worke, whereby it will appeare that the saving of mens workes will then be a profitable Invention.

CHAP.



CHAP. XII.

As for the Objections against any thing contained in this Booke, to free my selfe from all partialitie toward my owne side, I have here set them downe all punctually as they have bin objected by severall Husbandmen, and others, in sundry conferences.

Objection. 1.

WEE finde in your Booke some things somewhat airie, and not so solid as we did expect; amongst the rest, you alledge that all riches are made of vapours congealed, and that you will teach us to congeale vapours at pleasure, into as much treasure as we list, and into what forme we please; if you satisfie us in this point, we will beare with all the rest of your imperfections, for these are our chiefe desire, and this worke being the summe of your Book, calleth your reputation most in question, if you doe not performe your undertaking herein.

Answer.

It is plaine that all Trees, Plants, and Fruits are
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made of vapours congealed, for nothing vegetateth but in Summer when the heate of the Sunne is in force to rarifie and turne the said fatnesse of the earth into a vapour, and is more manifestly seene in *Greeneland*, where the heate is wanting, there the Aire is not able to erect it selfe into one Tree in the whole Countrey: and for a more full demonstration of this my position, that all things are nothing but congealed vapours; let us consider of these things following, viz. the raining of Frogges, Thunderstones, Wheate, or a thing almost like to it: the cause of these things can be no other, but that when a convenient heate had almost formed them in their proper Spheare, viz. in the superficies of the earth, then a greater heate accidentally comming, raised up the spermaticall substance thereof into the common Aire, and there hatched the same, till such time as the magnitude and ponderositie thereof caused them to fall to their proper Sphere.

And as for the infinitie of this worke, it is plaine that a thousand Oke Trees or other, will grow in one Farme in the hedgerowes, as well as one, and for the gaine thereof, what are they at the first, but a thousand Acorns? the like is to be seene in Corne. I have had 38. eares of Barley, containing 1124. graines, come of one graine set in foure moneths: so we see there is no more to be done, but to learne to fit the seede to the ground and Climate, and then to plant it; and then we see that Nature is no niggard, but giveth riches to all
that

that are industrious, be their number never so much increased.

Objection. II.

We finde a contradiction in your Booke, for in one place you say, that all riches are made of the fatnesse of the earth, which is a combustibile matter; as Oile, Grease, Rosen, Pitch, Tallow, Sulphure, &c. and in another place you say also, that Gold is made of the said fatnesse of the earth, which is a substance altogether free from burning, and is not diminished in the fire; we would be resolved, how these seeming contrarieties can be true.

Answer.

I said that there is a double fatnesse in every compounded body, the one combustibile, and the other incombustibile, which may be seene in the burning of the highest twiggess of any Tree; for first there riseth a sharpe vapour in the burning, which is the universall spirit of the world, and the *vehiculum* which by the helpe of the Sunnes heate, lifteth up the former fatnesse, then the combustibile part consumeth into aire by the fire; then the ashes remaining, being laid upon land fatneth it, whereby a fatnesse incombustibile is discovered, and these two fatnesses are in mineralls as well as vegetables, and of the incombustibile and fixed fatnesse minerall is Gold made by nature, and also by art, imitating Nature; and if any man doubt it,

let him hazzard a good wager upon it, which shall be equalized, and the question shall be determined by the greatest, viz. experience which admitteth no imposture; yet I could advise my best friends that love to trie experience, to spend their money, time, and studie upon Improvements in Husbandrie, being workes more certaine, and more profitable.

Objection. III.

We must needs confesse that barrennesse increaseth by the usuall practise in Husbandry at this day, and by the two wayes alledged by you in your Booke, viz. first, by the carrying of the sheepe from the Commons with their full bellies into the Folds, whereby the one ground is impoverish- ed to enrich the other; and this we conceive may be cured by your new Inventions, for providing of manure which was neglected before: secondly, the Land is much impoverished by great Land- floods, which carry a wonderfull quantitie of fat- nesse yearely into the Sea, but how this should be remedied we know not; we must needs confesse that your Inventions for the providing of manure more then before, are excellent good and profi- table for the generall good, and will withstand the barrennesse much; so that it will not increase so fast as it did before: yet we conceive that barren- nesse will still increase, though more slowly; for all your multiplications of manure will not equalize, much lesse overmatch the fatnesse carried yearely by Land-floods into the Sea.

Answer.

Answer.

It is certaine that the new provision of manure by Lime, ashes, Marle, Muffilage, and residence of water, and by the rest of the Inventions, will equalize and overmatch the great quantitie of fatnesse carried yearely into the Sea, if the same shall be industriously put in practise: the subterraneall vapours yearely elevate a great quantitie of fatnesse, though in some places more abundantly then in others; for I have knowne arable land borne good corne time out of minde, with every third yeares rest and fallowing, without any manure at all, but onely by this subterraneall vapour arising from some subterraneall fat substance: but though this be but in some speciall places, yet there is no question but that it helpeth well in all places, though of it selfe it be not sufficient without addition of manure; but if all men would be ruled by me, we would not onely put these workes in practise very industriously for the generall good, thereby to testifye our love to all men both living, and yet to come; but also we would make use of my first Invention mentioned in my first Chapter, viz. to bow the knee of the heart, instead of the usual and complementall bowing of the knee of the body, to the Donor of all goodnesse; then might we have firme confidence, having formerly testified our love to God, by the generall love of all his creatures, especially those of our own kind, that he would send the former and the latter raine in due season, without

scanting us at any time, and pouring downe too much at other times, whereof we had experience this last yeere, wherein both these events have caused losse to this Kingdome above the value of 20. subsidies in one yeere : if this new invention were well put in practice, then would the heart-maker take away these our stony and hard hearts, and give us hearts of flesh, and all mourning and lamentation for want of food would be done away : for then would our labours be seconded by the chiefe master in Husbandry, so that we should no more bee frustrated of our expected Harvest.

Objection IIII.

Wee finde your answers so satisfactory, that wee will make no more objections but this one, which we will almost answer our selves, which is this: wee must needs confesse that your discourse concerning the preservation of Corne from blasting, is very rationall, and argueth much skill in Husbandry; yet whether the practise thereof will be answerable, though we see no cause to doubt thereof; yet being schooled by your selfe, wee will suspend our full beleefe thereof, till experience testifie and manifest the truth, and wee desire to be excused herein, because it is your own counsell to us, wherein wee see not but that howsoever it proveth, you your selfe are out of blame, for that every man may try the truth thereof by your owne direction, without any materiall prejudice in small quantitie at the first. Therefore if it may please you to shew us
your

your new invented Engines, and the use of them, how the tedious labour of your new workes may be eased, then we will declare our opinions to all posterity, and so take our leaves.

Answer.

Well, goe with me, and you shall receive as much satisfaction by demonstration, as formerly by discourse. You see here the experiment of my Persian wheele; you see that it is 40. foot high, you see that the bottles doe fill in the River, and empty themselves into a Trough 36. foot high, and the water is conveyed into yonder Ditch which is a mile long: you see divers stops in the Ditch, whereby the water is caused to flow over yonder barren ground, whereby it is become good meadow; you see it is of no great cost, nor subject to be out of order, nor doth require any great repaire; you see the motion is perpetuall, day and night, without looking to, if you were in *Persia* you might see two or three hundred of these in one River: if the water come from chalky or lime-stone ground, or be mixed with land-flouds, then it doth fatten the ground wonderfull. Now looke upon my Engine, for the cleansing of Thorny and rough grounds: you see the nether part is like a three grayned dung-fork onely, it is 40. times greater and stronger: you see the upper part is like a lever, but ten times stronger, and very much longer: you see here a great bush of Thornes and Briers together, which to eradicate the common way
would

would spend a good part of a mans dayes worke :
Now thus I set my Instrument halfe a foot from the
root of it slopewise, then with an hedging Beetle I
drive it in a good depth, then I lift up the steele of
it, and put in the great iron pin to keep it streight,
then I take hold of the cord that commeth downe
from the top of it, and pull it downe, and you see
that in a quarter of an houre the whole bush is
wrenched up by the rootes. In this manner by 4. or
5. settings you may so loosen the earth about a great
tree, that the next great wind will blow it downe.
Now I come to my Engine for setting of Corne,
which to bring to this perfection, hath cost me 16.
or 18. yeeres practise : you see that a man may set
1000. graines in the twinkling of an eye, and the
charging and discharging of the graines at conve-
nient distance is easie and expeditious, and you see
that I make the holes for the grains to fall into with
my foot and the weight of my body : you see that
these Engines may be made of all magnitudes at
pleasure, and of all prices, from 10. shillings to 40.
and he that had rather spare labour then mony may
have a small Engine; and hee that had rather spare
money than labour may have a great one : you see
how equally at distance it setteth the graines, so
that no ground is lost, as it is when the seed is con-
fusedly throwne with the hand, for there you shall
finde that sometimes there is a void place of a foot
broad; sometimes a dozen graines close together,
when as one graine in the place would produce as
much increase : for I have had 1104. graines come
of one, and 38. eares grow upon one corne set; you
see

see that either the Engine may be made fit for the Land, or the Land for the Engine, that the Engine may set a side of a Land from the ridge to the furrow at once, or being lesser, at twice, or thrice at pleasure.

You see the infinite profit of this worke, for by this worke the third part of the arable Land may be laid for Pasture or Hey ground, and the rest will produce corne to maintaine the whole Kingdome: also you see the infinite profit that will arise in time of dearth, for by this meanes the Corne reserved in Seed time, will releve the Countrey of it selfe, which in former times hath been releevd by importation from other Countries, whereby the wealth of this Kingdome hath been so exhausted, that they have not recovered the same in many yeares following; which inconvenience might have easily been remedied by this invention: you see here my Engine for the making of the little ridges and furrowes, you see how neatly it layeth the earth in little furrowes just upon the rowes of Corne: you see that it maketh divers ridges and furrowes at once with good dispatch: and it may be fitted to be drawn with Horses, or to be wrought with mens strength in such wet grounds, where it is convenient that the little furrowes be descending from the ridge of the Land to the furrow of the same.

If I finde the like good acceptance in generall, which I have found at your hands, and at the hands of all that I have hitherto acquainted with my endeavours, of which sort many of them have been of the most solid and judicious men in the Land in these affaires: then will I act out my part, and like

as hitherto I have acted the part of a torch which consumeth it selfe to give light to others ; so will I doe the rest of my life , and furnish you with more and more new inventions and improvements , and will furthermore publish my Booke of experiments , which hath been my whole lifes practise , which I have presumed to intitle with the name of *Arts Mistresse* : for that all questions therein handled, are determined by irrefragable demonstration and infallible experience , which Booke containeth many notable experiments : whereof some are for gaine, some for health : some for pleasure , and some for prevention of losse , to those who are naturally inclined to trie experiments, wherein my failings , as well as my prosperings are truly laid downe; and so plainly, and with such cautions, that it will save much studie and labour , and many millions of money , which else will be spent in future ages by trying the same againe by men of such inclinations, to whom it is as great paine to forbear studie, as it is to the others to studie at all: and for a farewell to both natures, I wish that those which love not to trie experiments may take their ease, and will lay no heavier taske upon them , but to wish well to the others , and the more to stirre them up to this charitie, I desire them to remember themselves what case they had been in , if some inventive braines had not found the plough and the use thereof , also if some of like disposition had not found out new wayes for the manuring and fertilizing of land afterwards , when Countries grew too strait for the numerous increase of people : Also I desire them to ponder well upon the matter contained in this Booke, and to consider well in what case their posteritie will be in two

or three ages hence, if no new Inventions and Improvements shall be from henceforth put in practise.

And for a finall conclusion, I will sweepe up the house with a beesome made of my owne follie, which shall be recorded against me, if hereafter I shall grow proud of my skill: for what am I but a piece of earth quickned and animated by the universall soule of the world? and what knowledge have I, but what every one may have if he follow my steps, viz. if he bow the knee of the heart to the donor of knowledge and understanding, and withall, digge for it as for treasure, by trying experiments to bring truth to light? and what excellent constitution have I to secure me, that I be not deluded by my fancy?

There needs no more demonstration of my folly, but my mad election of the time to publish these my Inventions; when men are ready to throw the Plough in the ditch, through a frivolous discontentment; which is manifest by their neglect of things which they know already; and therefore they are very unapt to be drawne to new Improvements; also their fisking away into the new Plantations so fast, sheweth that they had rather be exiled from their native Countrey, then to be disciplined by any new Inventions; which I make no question, but they will be called Innovations by many, whose judgements are ruled by their evill constitutions.

To demonstrate the truth of these my relations, there needeth no more but to shew their follies, which are in my conceit as frivolous, as if an Husbandman should lose a good sheepe for a licke of

Tarre : for what is two pence, foure pence, or fixe pence upon an Acre of ground, in comparison of what may be raised out of it by industrious Improvement ; the paiment of a little, for the preservation of much, is in my conceite, a good bargaine, and the present grudging and murmuring at the payment of money for the safeguard of the rest, is a conceited folly.

But for that I would be excused from partialitie, I will hereby testifie my uprightnesse, for I will neither flatter the one nor the other, but declare my owne fancie ; for I will not cologue with my Prince for preferment, nor comply with the subject for any respect whatsoever ; but according to my wonted manner, shew to the utetrmmost of my skill, what is best to be done for the generall good ; that is, if all would be ruled by me, we would fall to worke bravely, and then we shall be able to give the King twice as much money as he hath occasion for to make use of for our defence, or his owne honour ; and the rest will be more then we neede for our selves ; for Nature is no niggard, but bountifully feedeth all her guests, be their monthes never so many, if they will but take a little paines to cut out their meate by the wayes prescribed in this little booke : I must needs confesse that at this time many are ill enough able to pay their money for the defence of the Kingdome ; but where is the fault ? Is it not in our selves ? I am assured that there is more good and apt land to extract riches out on, in *England, Scotland, and Ireland*, then is in all *Spaine* ; and now we have knowledge how to doe it, so that there is nothing wanting but willing mindes ; and why men should be backward in this worke, I can finde no reason, but their evill consti-

tutions causing them to be averſe to the generall good; and then if they ſay they love God, or pretend any good Religion, they will bridle theſe evil affections; for elſe no man of underſtanding will beleve them; for indeede they doe but ſay ſo, and flatter themſelves with their deluded fancies; and as for reward for their worke it is ready, in regard that many of my Inventions and Improvements doe conſiſt upon ſkill and vigilant providence, rather then upon corporall labour; and thoſe which doe conſiſt of labour, bring a preſent and ſpeedy profit. As for thoſe which bring not a preſent profit, it is fit that the Landlord ſhould be at the charge, for that the yearely value of his land is advanced, even as it is in *China*, where they lay that fine earth wherewith they make their curious veſſels in the wombe of the earth to digeſt many yeares, and as the yeares paſſe on, they ſell it one to another, every ſeven yeares dearer and dearer, till that it be brought to perfection; which time being knowne by experience, they have a kinde of reaping of benefit by it every yeare, notwithstanding the length of time betweene the worke and the wages or harveſt.

And let no man for any diſcontent whatſoever, though it were juſtly conceived, neglect the future happineſſe and flourishing eſtate of this kingdome; for I will lay my life at the ſtake, that if this worke ſhall be well carried, there is tenne times as much riches clearely given to the Common-wealth preſent and future in this little booke, as all the Inhabitants and their Predeceſſours have ever paid to Church and King in their dayes ſince it was a Kingdome: for partly by the prevention of loſſe in the

blasting and mildewing of your Corne, and in the preservation of your Sheepe from rotting, and partly by the benefit of all other my Inventions and Improvements duely practised, there will arise a gaine inestimable and infinite, not to be exhausted by time: so praying to God the Creator of all, that it may doe as much good as I intended, I humbly take my leave, desiring your prayers onely for me and my posteritie; for I crave none of your riches.

The Postscript,

AS for faults in my Coppy, I see a thousand in my selfe; and make no question but that others will espie many more; yet in regard that my conceit telleth me, that though *Cicero*, and *Demosthenes* had laid their heads together in the opening of it; yet every one would expound the same to their best advantage; which being a thing that I desire, I will therefore trouble my selfe no more about it, but commit it to the Worlds censure in its rude vesture; and I must needs confesse that my owne fancie hath a little withdrawne me from publishing all that I know in these affaires, being conceited that it may prejudice me hereafter, for that Nature will not shew herselfe naked to any blab-tongue; in the beholding of whose beauty is my chiefe delectation. I have as good a minde to it, as to any temerarious enterprize that ever I tooke in hand, to try my cunning to strike off at one stroke the head of that ougly monster, Covetousnesse, by taking all danger of future want cleare away, for then none but fooles would be covetous; but the danger that two worse heads, viz. Pride and Luxu-

rie would spring up in the roome, stayeth me : therefore I not knowing so well how to cut off those heads, will rest my selfe awhile, waiting with patience to see the successe of these my labours. It may be these things published already will be some good meanes to metamorphise that monster really into good Husbandry and godly providence; under whose habite he loveth so well to hide his ugly face; which in my opinion, is the surest way for the well ordering of the Universe: for as it is holden a frivolous thing to hoord up Snow in *Friesland*, where there is never like to be any want thereof; so would it be holden here to hoord up riches, being nothing but congealed Aire, or vapours which are not likely ever to be wanting here, if the art of doing the same the easiest way should be fully discovered; for then not onely covetousnesse would cease, but also providence would be endangered to be thrust out of the Schoole, which is inconvenient; here is maintenance in this book discovered for many Ages, though Warres should cease and people should increase marvelously; yet at length there will be jarring and jangling againe, when the people grow too numerous for their maintenance, and then if God be not pleased to teach them new Improvements, they will doe as they doe now, viz. like as when tenne dogs have tenne bones, every one lieth downe quietly and eateth his bone; but if there be but nine bones for the ten dogs, then the odde dog setteth all the rest together by the eares: so will it be with men when their foode groweth too short for their number; and this is manifest by the former practises of the World: for when they had peace and plenty, and
were

were not scanted of foode and maintenance, then they builded Churches, and did many worthy workes; but when jarring and jangling came through want thereof, they grew so farre off from building of Churches, that they would scarcely re-paire the old ones; and did as they doe now, spend their thrift in mischievous contentions.

But that I will not altogether feede the World with *Tantalus* his Apples, I will give them one bit in this manner: when these Inventions and Improvements contained in this Book shal be stretched to the highest, and will serve no longer for the maintenance of the numerous increase of people; then let them beginne a new lesson: and whereas in former time it was an excellent Improvement to teach Horses and Oxen to doe the workes of men, by which men were spared to be Princes, Governours, and Officers in Common-wealths; so then there being no neede to increase the number of those; let the new increase of people be employed in spade-work, by which meanes every Acre of land may be improved severall wayes to be foure times as good as now the common way; besides that, the ground which now Horses and Oxen doe eat up, may then be improved in like manner, for the maintenance of men; whereby they may live well, and not have any intolerable slavery; for that there need issue but little out of every ones labours to Church and King by reason of their wonderfull number.

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